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Do good stories produce good health?

Exploring words, language, and culture

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There is a culturally-held belief that good narratives are associated with good mental or physical health. Scores of studies have demonstrated that writing about emotional upheavals can have salutary health effects. Despite the writing-health relationship, there is scant evidence that expressive writing samples that are judged to be good narratives are themselves linked to health change. Across multiple studies, linguistic features of essays have been empirically linked to health changes. For example, use of positive emotions, increasing use of causal and other cognitive words, and shifts in pronoun use are correlated with fewer physician visits. These language markers, however, are not strongly related to the quality of narrative. Whereas most research has been conducted with English-speaking samples, new analytic methods suggest that many of the language findings can be exported to other languages and cultures. Implications for our understanding narrative, language, and culture within the context of new language analytic methods are discussed. (*Narrative, Expressive Writing, Health, Culture, Language*)

People are drawn to good stories. As evidenced in this selection of papers, narratives are viewed as ways individuals organize complex themes and convey them to others. There is also the sense that the ability to transform personally upsetting experiences into stories can result in improved physical and mental health. For the last two decades, our lab has been grappling with the narrative-health relationship. Is it really true that constructing a story about emotional upheavals can improve health? Are some stories "healthier" than others? Can we identify components of stories that predict health improvement? Are "healthy" stories also good stories? The answers to these questions have both surprised and perplexed us.

In this article, we first describe evidence linking expressive writing with markers of physical and mental health. There is little doubt that translating emotional experiences

into words can be beneficial. We then outline our attempts at defining healthy stories. Various forays into the psychometrics of narratives and language use have yielded new ways of thinking about the central ingredients of writing that may correlate with healthy outcomes. Next, we discuss the enigma of language and culture. That is, how does expressive writing work in other languages and what effects, if any, result from telling stories in different languages. We conclude with a discussion of the ways we can study how language plays a role in the etiology of sickness and health.

Narrative and health: Expressive writing

Our interest in understanding how people make sense of their lives started in the 1980's when we discovered that when individuals wrote about traumatic experiences they subsequently exhibited improvements in physical health (Pennebaker & Beall, 1986). The standard laboratory writing technique involved randomly assigning participants to one of two or more writing conditions. All writing groups were asked to write about assigned topics for one to five consecutive days, for 15 to 30 minutes each day. Those in the experiment were assured that their writing would be anonymous and that they would not receive any feedback from the researchers of the study. Those in the experimental condition were asked to write about their deepest thoughts and feelings about the most traumatic event of their lives. Participants assigned to the control condition were asked to write about superficial topics, such as how they use their time (Pennebaker, 1997).

The writing studies have yielded an impressive array of results. From the very beginning, we have been fascinated by the writing itself. Participants — from children to the elderly, from honor students to maximum security prisoners — disclose a remarkable range and depth of traumatic experiences. Rape, family violence, lost loves, deaths, and tragic failures have been common themes in all of the studies, with approximately half of all participants writing about experiences that most people would agree are truly traumatic. From an educator's perspective, the writing samples are beautifully written. A student whose term paper is clunky, poorly written, and incoherent will write a trauma essay that is moving and artfully structured. Emotional writing, then, reveals the natural abilities people have to construct stories.

While the nature of the writing itself is interesting, the real value of expressive writing is its influence on physical health. In our first writing study (Pennebaker & Beall, 1986), we followed the students' illness visits to the university health center in the months before and after the experiment. Compared to controls, those who wrote about emotional upheavals reduced their number of health center visits by half in the two months after writing. Later writing studies from multiple labs supported the initial findings. Not only did those who wrote about traumatic experiences visit their doctor less often, they also reported fewer physical symptoms and exhibited enhanced immune system functioning (as measured by various objective physiological measures).

There have now been over 200 articles published by labs around the world using the writing method to influence health, biological activity, emotions, and behaviors. At least three meta-analyses have been published that indicate that expressive writing had been

weak to moderate effects — ranging from effect sizes of .08 to .67, depending on the samples and outcomes (Frattaroli, in press; Frisina, Borod, & Lepore, 2004; Smyth, 1998).

Do good stories or narratives make people healthy?

When people write about troubling personal experiences — even those they have never talked about before — their stories are powerful and compelling. Although we can infer that the act of expressive writing is associated with improved health, we can't conclude that good stories are the causal explanation. Not all people exhibit benefits from expressive writing and not all stories are good narratives.

Over the years, we have attempted to establish the narrative-health link in several ways. Those more familiar with research in narrative could have predicted many of our initial failures. The most daunting problem has always been in defining what makes for a good narrative. As suggested by other authors in this volume, good stories should have a clear beginning, middle, and end; they should be coherent; they should appreciate the perspective of the reader or listener. Indeed, they should have many of the same characteristics that Grice (1975) defined in having coherent interactions with others.

Given that all people seem to have a good intuitive sense of what distinguishes a good from a bad story, we embarked on a series of psychometric studies on narratives. The results have not been pretty. We have had several students read dozens of writing samples and have had them rate the degree to which each was a good story, a good narrative, had good narrative structure, etc. The correlation between any two judges has averaged in the .15 to .40 range, averaging around .22 (Graybeal, Sexton & Pennebaker, 2002; Pennebaker & Francis, 1996). These low numbers suggest that what is a good story in one person's eyes is not necessarily a good one in someone else's.

Are those people who naturally make good stories when writing about emotional topics the same people who make good stories when writing about superficial topics? Is coherence related to personality? Is coherence related to physical health? Further explorations into the psychometrics of narrative revealed that there is not a straightforward answer for story coherence and its impact on health and well-being. Although narrativity can be reliably coded as long as there are enough independent raters, story-making does not appear to be an individual difference that transcends writing topic. Rather than being a powerful trait that certain people bring to any writing situation, it appears that the situation determines the likelihood that a given person will write a good story. Furthermore, personality does not correlate with story-like quality of an essay. Finally, story coherence was not associated with physical health.

Unfortunately, we are not yet at the point of being able to define what is meant by coherent, understandable, or meaningful essays when it comes to writing about emotional upheavals. One person's meaning may be another's rumination. Many times in our own research we have been struck how a person appears to be writing in a way that avoids dealing with what we see as a central issue. Nevertheless, the person's health improves and he or she exclaims how beneficial the study was. A good narrative, then, may ultimately be in the eye of the writer.

Deconstructing narratives: Features of writing that predict health

The problem we have faced is partly practical. Judges don't agree on the definition of good stories when reading traumatic essays. Reading the essays takes considerable time and tends to depress the readers. The stories, after all, are deeply personal and painful. Most damning is that we have not found any links between judges' ratings of essays and ultimate health outcome.

An alternative approach has been to focus on the components of a narrative rather than on the entire narrative itself. Perhaps the ways people use particular words or phrases could reveal how they are seeing the world and thinking about their experiences. If the analyses can be done on the word level, it should also be possible to create a computer program to search for and count the words from various categories. Indeed, we developed a computerized text analysis program that we called Linguistic Inquiry and Word Count, or LIWC (Pennebaker, Francis & Booth, 2001) to accomplish this task.

The program was developed by having groups of judges evaluate the degree to which about 2,000 words or word stems were related to each of several dozen categories. Among the 70+ categories, the LIWC program calculates the percentage of words within any given text that are negative emotion words (sad, angry), positive emotion words (happy, laugh), cognitive markers (e.g., causal words), standard function word categories (1st, 2nd, and 3rd person pronouns, articles, prepositions), and various content categories (e.g., religion, death, occupation). Analyzing hundreds of text files from essays written by people in the expressive writing tasks, we have found the following language dimensions to be related to improved health:

Emotion words: High levels of positive emotions, moderate levels of negative. The use of positive- and negative-emotions has revealed interesting findings (Pennebaker, Mayne & Francis, 1997). The more people use positive-emotion words, the more their health improves. People who can write about horrible experiences and still use words like love, care, and happy are much better off than those who don't use these words. Ironically, those who even say they don't love, don't care, or are not happy are more likely to benefit. It is as if the use of the positive emotion word suggests that the person is thinking along a dimension of positivity. In other words, not being happy is much better than being sad. Negative-emotion word use is only moderately correlated with health changes but in an unexpected way. Individuals who use a moderate number of negative emotions in their writing about upsetting topics evidenced the greatest drops in physician visits in the months after writing. Writing with too many or too few negative emotion words is associated with no health improvements.

Cognitive words: Constructing a story. Across multiple studies, there is evidence to suggest that the use of certain cognitive words — those associated with causality (e.g., because, reason) and insight (e.g., understand, realize) — are linked to improved health. Interestingly, the actual level of usage of these words is not important. Rather, those people who increase in their use of these cognitive categories from the first to the last day of writing are the ones who benefit. Ironically, those who use a high rate of these words on the first day of writing are unlikely to show health improvements.

Taken together, these findings suggest that those who are changing in the ways they are thinking about their emotional upheavals are the ones most likely to benefit. Constructing a story is more powerful than having a story.

Pronoun usage: Perspective switching. People who are depressed use first person singular pronouns (I, me, my) at much higher rates than non-depressed individuals (e.g., Rude, Gortner & Pennebaker, 2004; Stirman & Pennebaker, 2001; Weintraub, 1989). When people use the word "I", they are briefly paying attention to themselves. When using other pronouns, they are attending to others. It is possible to examine writing samples and get a sense of people's perspectives — that is, where they are focusing their attention.

Using a statistical technique commonly used in artificial intelligence, Latent Semantic Analysis (LSA, Landauer, Foltz & Laham, 1998), we have been able to discover how the patterns of pronoun use can change from day to day in people's writing. Using LSA, we learned that the more people change in their use of pronouns from day to day in their writing, the more their health improved (Campbell & Pennebaker, 2003). Closer analyses revealed that these effects were entirely due to changes in pronoun use. Specifically, the more that people oscillated in their use of 1st person singular pronouns (I, me, my) and all other personal pronouns (e.g., we, you, she, they), the more people's health improved. If individuals wrote about emotional upheavals across the 3–4 days of writing but they approached the topic in a consistent way — as measured by pronoun use, they were least likely to show health improvements. The findings suggest that the switching of pronouns reflect a change in perspective from one writing day to the next. Interestingly, it doesn't matter if people oscillate between an I-focus to a we- or them-focus or vice versa. Rather, health improvements merely reflect a change in the orientation and personal attention of the writer.

We as individuals are constantly making stories or trying to make sense of our lives. Consequently, one might think that our ability to make a coherent story will have an impact in our health. However, what predicts health improvement, is not necessarily being able to write a coherent story — with a clear beginning, middle, and end — but, what helps individuals is just to tell a story, in other words to express thoughts and feelings. In addition, we can define a good narrative by looking at linguistic markers that result in healthy outcomes. In short, we conclude that good narratives are not coherent, but good narratives are those whose linguistic markers predict health and well-being.

Since writers use language to construct their narratives, it follows that language plays a significant role on the content of the story. Furthermore, since language and culture shape who we are, it is only logical to assume that narratives across cultures will reflect the context and the situation in which individuals are immersed. Thus, one might ask is expressive writing beneficial for people in other languages and cultures? And if yes, do the same language rules apply in predicting health benefits that we find in English to other languages and cultures?

Narratives across language and cultures

To date the vast majority of studies analyzing how expressive writing influences health has been conducted in the U.S. or in English-speaking countries. Do people from other cultures also benefit from writing? The answer appears to be yes. Studies in Spanish (Paez, Velasco & Gonzalez, 1999), Dutch (Schoutrop, Lange & Hanewald, 2002), Italian (Solano, Donati, Pecci, Persichetti & Colaci, 2003), and Japanese (Sato & Sakano, 2001; Yamamoto, Yogo & Zuzuki, 2004; Yogo, Fujihara, Yoshimura, Mototani & Morimoto, 2004) demonstrate that the benefits of writing transcend culture and language. All of these studies were conducted among native speakers within their own cultures.

It makes sense that language is a powerful way to organize complex emotional experiences. What happens, however, if a person grows up straddling two languages and/or cultures? It has long been recognized that culture and, by extension, language, colors life experiences. If people speak multiple languages, does writing in one particular language provide greater benefit than another? Alternatively, we have preliminary evidence that people who are able to change perspectives in their writing are the ones who benefit most. Would switching languages while writing about emotional upheavals provides automatically different perspectives and, therefore, greater health or emotional benefits than writing in a single language? The results from a recent expressive writing study suggest that the answer is yes (Kim & Pennebaker, 2006). Specifically, Mexican-Americans and Korean-Americans bilinguals who wrote about emotional upheavals in both their native and acquired languages benefited significantly more from writing than those who wrote in a single language.

One of the few universals is that humans in all known cultures use language and tell stories. Stories are used to describe and presumably to understand emotional upheavals. Our linguistic analytic approach can help to determine if the same features of stories that predict health outcomes in one language do so in others. The ability to compare narratives across language is hampered by a variety of translation issues. For instance, in order to translate a narrative into English one has to consider equivalence across translations at different levels: vocabulary, idioms, grammatical, conceptual. Thus, the task of creating a perfect translation seems to be insurmountable. An example of translation's underlying problems is the development of a Spanish version of the LIWC dictionary (Ramírez-Esparza, Pennebaker, Suriá & García, 2006).

Although the Spanish dictionary is comparable to the English dictionary, there are some categories that are not comparable across languages. For example, the category "first person singular" is different in Spanish than English, because in Spanish the pronoun "I" is often omitted and is implied in the conjugation of the verb. Similarly, some common words in Spanish have positive emotion connotations (querer = to want or to like) whereas in English, the verb "to want" implies a negative need state. The net effect of these types of translation problems is that standard text that is available in both English and Spanish often appears to use more "I" in English and more positive in Spanish.

Despite problems such as this, within-language or within-culture comparisons can help us to interpret features of people's stories. For example, the analysis of online blogs in English finds that depression blogs use far more 1st person singular words than non-

depression blogs. Interestingly, these effects are even more pronounced in Spanish depression blogs than Spanish non-depression blogs (Ramírez-Esparza et al., 2006). There is much more that can be done within the Spanish language and in other language/cultures. Searching for good narratives across languages is one important goal from our lab, thus we have been developing LIWC versions in German, Dutch, Italian and Korean.

The translation of dictionaries across languages will never be exempt from translation biases. With this in mind we are currently testing another methodology that overcomes the translation problem and shows potential to understand narratives across languages and cultures. We have called this methodology the meaning extraction technique. The meaning extraction methodology was developed with the purpose of learning the most common themes people use when they describe their personality (Chung & Pennebaker, 2006). This methodology has the same application for studying the most common themes people use when describing their emotional upheavals or when talking about their illness. Some individuals might focus in their family, others in their social relations, others in positive aspects, others in negative features, and so onwards. Themes could be analyzed by using judges; however, this approach is cumbersome and requires elaborate coding schemes, along with multiple trained raters in several languages. Therefore, again, in order to extract themes we have relied in computerized text analytic tools.

The meaning extraction method relies on a simple factor analysis of words. Imagine, for example, that we had several hundred people describe a topic such as the meaning of their depression. We would then select the 500 or so most commonly used words in these essays (excluding function words such as articles, auxiliary verbs, pronouns, etc.) Now imagine that we create a matrix of whether or not each person used each of the 500 words. Using this method, a factor analysis will tell us which words are statistically clumping together. Indeed, we find that each factor is a meaningful dimension. For example, one factor is likely to be made up of words such as medicine, doctor, Prozac, psychiatrist, etc. Another is likely to be words like sad, cry, tears, heavy, etc. Yet another might be words suggesting family. This meaning extraction method is telling us many of the basic themes irrespective of context.

What is particularly exciting about this method is that it is only looking for groups of letters (which we call words) separated by spaces and is seeing how they mathematically co-occur. The groups of letters can be in any language. We have a method, then, that can extract meanings across languages. Indeed, we are currently collecting thousands of depression and cancer blogs in English, Spanish, Korean, and other languages to see if the factors are comparable (they are not). Methods such as this provide a new window for understanding narrative across cultures.

Note that this methodology avoids translation biases. The dictionary for each language is created by a native speaker of that language. The only translation that is done is at the end of the process when factors of words have been defined. The translation of words into English is done only so we can make sense of them. In short, we are relying on mathematical procedures to understand narratives of people's illnesses across languages and consequently, we are avoiding imposing our own cultural systems in the analyses and in the translation.

The big picture

The concept of narrative has tremendous intuitive appeal for research psychologists and psychotherapists. In our guts, we all "know" that constructing good stories is emotionally healthy. Unfortunately, this is often where the scientific story ends. The problem that we all must face is to define narrative, prove that it is causally linked to good health, and is relevant to therapeutic processes both within and between cultures. Where do we stand in regard to these challenges?

Can writing stories about emotional upheavals result in improved physical and mental health? Yes — at least at the aggregate level. People asked to stand back and explore their deepest emotions and thoughts for as little as 15 minutes on three occasions exhibit health improvements compared to people who do not write or who are asked to write about superficial topics.

Can we distinguish good stories from bad stories and, if so, are good stories more likely to result in health improvements? At least when examining stories about emotional upheavals in people's lives, it is difficult to distinguish between reliably good stories and not-so-good. Even with large groups of well-trained judges, those stories judged to be good narratives have not been linked to health changes.

Are there linguistic features to stories that predict health improvements? Yes. People who use high levels of positive emotion words, an increasing number of cognitive words from the first to last day of writing, and who exhibit changes in pronoun use from essay to essay are more likely subsequently to have better health. These patterns may roughly mirror processes of optimism, story construction, and changing perspectives of the authors.

Can the findings from English-speaking samples be generalized across languages and cultures? Yes. Indeed, people who are able to switch from one language to another may benefit particularly well.

Can we begin to find the features of narrative using inductive, mathematical procedures that can work equally well in other languages? Possibly. In the years to come, increasingly sophisticated statistical methods will begin to redefine how we think about narratives and language and their links to mental and physical health.

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