

HOW PEOPLE TALK ABOUT THEIR ILLNESS IN INTERNET?

A Preliminary Study Using the Spanish Version of LIWC

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◆ **Computer-mediated communication** has become a new source of informational or emotional support for many people suffering diseases around the world

◆ The number of newsgroups, forums or bulletin boards created for Spanish-speaking patients is increasing. In these groups, participants seek **information and/or share concerns about their illness conditions**. These give us the possibility of better understanding the illness experience through the analysis of postings contents.

◆ **Text-analysis software** has been designed to map linguistic and psychological variables of written messages and can be used to examine the postings from participants in internet groups. One of the most used programs in English language is the **Linguistic Inquiry and Word Count (LIWC)** (Pennebaker, Francis, and Booth, 2001).

◆ Recently, an **Spanish version of the LIWC** has been developed showing its applicability in Spanish texts (Ramírez-Esparza, García, Suriá, & Pennebaker, 2004).

OBJECTIVE

The aim of this study was to analyze the word choice of Spanish-Speaking people in online forums of four disease groups as a function of sex and illness condition.

METHOD

A total of **357 postings** of participants in four internet bulletin boards (diabetes, leukaemia, psoriasis and C hepatitis) were analyzed. Posts with at least 30 words were used.

The Spanish version of the **Linguistic Inquiry and Word Count (LIWC)** program, which has an internal dictionary of approximately 7000 words and word stems, was used to analyze the postings of the virtual forums.

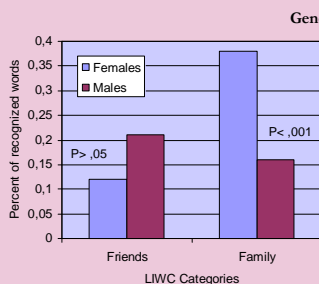
The LIWC analyzes written text on a word by word basis and calculates the **percentage of the total words** that matches up to 72 language categories and subcategories (see table)

| LIWC CATEGORIES | LIWC SUBCATEGORIES | Examples (English Version) |
|-------------------------|--|---|
| LINGUISTIC DIMENSIONS | Word Count, Words captured, articles, prepositions... Pronouns | <i>I, we, self, you, other</i> |
| PSYCHOLOGICAL PROCESSES | Affective Processes Cognitive Processes Perceptual Processes Social Processes | <i>happy, ugly, joy, love, sad.... know, because, think, should.... see, touch, view.... talk, share, buddy, brother, ...</i> |
| PERSONAL CONCERNS | Occupation Leisure Religion & Death Physical States (Body functions) | <i>Work, class, student, employ.... Houses, football, cinema, game.... God, church, heaven, dead.... Ache, cough, cancer, cardiac....</i> |
| RELATIVITY | Time Space Motion | <i>Past, present, future Up, down, under.... Walk, move, go....</i> |

RESULTS

LIWC Spanish dictionary captured **75,64 %** of the words in the messages

Differences in linguistic dimensions use by disease group



Gender differences in word use

- ✓ Females used a higher rate of **pronouns** than males ($t(336)=2,25; p=0,025$).
- ✓ Related to **“social processes”** category, differences were found (see graphic)
- ✓ Analysis revealed no significant gender differences in the LIWC scores of “affective processes”, “cognitive processes” and “personal concerns”.

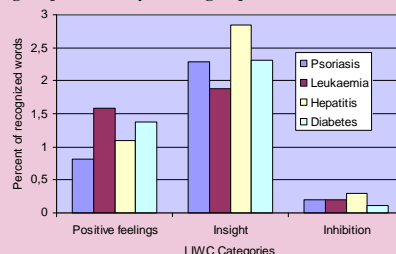
✓ Length of posted messages (**word count**) was different by disease group; participants with **leukemia** ($M=165,65$ words) wrote significantly longer messages ($p=0,004$) than **diabetics** ($M=97,19$ words).

✓ LIWC Spanish dictionary captured **78,16%** of the words in the postings written by people with leukemia, **75,87%** in the messages from diabetics, **74,91%** in the hepatitis group and **74,31%** in the messages posted by participants with psoriasis ($p=0,003$).

✓ **“Self-references”** words (I, me, my) and total first person pronouns or “self” (I, we, me) were used most frequently by **diabetes** group ($p=0,000$). Posts on the **leukaemia** board contained the highest percentage of total second person pronouns (you, you'll) ($p=0,002$). No differences in third person pronouns were found.

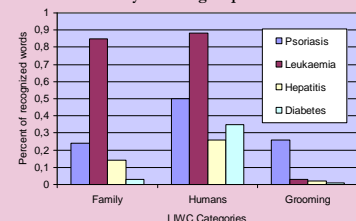
✓ Messages from psoriasis group contained the fewest **“positive feelings”** words compared to leukemia group ($p=0,001$) and diabetics ($p=0,024$). There were no differences by disease in the LIWC scores of “optimism”, “anxiety” and “sadness”.

✓ **“Insight”** words (think, consider, know) were used most frequently by **hepatitis** compared to leukemia forum ($p=0,005$). Posts on the **hepatitis** board contained higher percentage of “inhibition” words (block, constrain) than diabetes group ($p=0,05$). No differences in causation and certainty categories were found.



Differences in “psychological processes” by disease group

Differences in “social processes” and “personal concerns” by disease group



CONCLUSIONS

◆ LIWC Spanish dictionary captured a considerable amount of words written in our four on-line groups comparable to previous research with English dictionary of LIWC. This result supports the **content validity** of the LIWC spanish version.

◆ This preliminary exploratory work shows some interesting differences in the styles of expression by disease. Leukaemia group used significantly more relational pronouns and positive feelings words suggesting a warm and supportive pattern of communication. Messages from diabetic people contained more self-references words which may be providing evidence about their usual references to personal experiences with the complex and changing treatment regimen in these patients. Posts on the psoriasis board contained the highest percentage of “grooming” words and the LIWC dictionary captured the smallest percentage of their words. These results may be showing the peculiarities of this skin disease and the recurrent people's references to new or alternative treatments which the LIWC dictionary didn't capture.

References

- Pennebaker, J.W., Francis, M.E. & Booth, R.J. (2001). *Linguistic Inquiry and Word Count (LIWC): LIWC 2001*. Mahwah, NJ: Erlbaum Publishers.
- Ramírez-Esparza, N., García, F.A., Suriá, R. & Pennebaker, J.W. (2004). *Un programa de ordenador que analiza textos en inglés y español: Su aplicación con personas deprimidas en Internet*. Manuscript submitted for publication.