

Subconsciously, we echo the speech of superiors

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(Phys.org) -- Want to know who holds the power? Just listen carefully, preferably with a little help from a computer. Research at Cornell shows that people speaking to someone of perceived superior status often unconsciously echo the linguistic style of that person. The effect is usually not noticed by humans but shows up in a computer analysis of large amounts of text. The linguistic clues were found in discussions in which the outcome matters to the speaker.

The rule seems to apply across many domains of life. The researchers found it in Internet discussion and in arguments before the Supreme Court. In the latter case, [language analysis](#) also offers clues to which justices may favor one side or the other in a case.

Graduate student and lead author Cristian Danescu-Niculescu-Mizil presented the research at the World Wide Web Conference April 16-20 in Lyon, France. Co-authors are Jon Kleinberg '93, the Tisch University Professor of computer science; Lillian Lee '93, professor of computer science; and Yahoo! researcher Bo Pang, Ph.D. '06.

While [sociologists](#) commonly study people in small groups, the [computer scientists](#) were able to find subtle effects because they worked with very large collections of text -- 240,000 conversations among Wikipedia editors and 50,389 verbal exchanges from 204 cases argued before the Supreme Court.

In conversation with someone more powerful, the analysis shows, a

speaker tends to coordinate with the other person's use of "function words": articles, auxiliary verbs, conjunctions, frequently used adverbs ("very," "just," "often"), pronouns, prepositions and quantifiers ("all," "some," "many"). This means that the effects are independent of the topic and would show up even in text that has been censored to hide or disguise the subject matter, the researchers say.

As a further test, the researchers trained a computer to measure language coordination on Wikipedia and then fed it text from Supreme Court arguments and vice versa. They got the same results either way, confirming that the effect is independent of the situation.

On Wikipedia talk pages, where writers and editors discuss their articles, status is clearly defined, with some editors identified as "admins," who have more authority over what goes into an article. The researchers found that when editors were promoted to an admin position, others coordinated language to them more after the promotion. In turn, the newly promoted administrators coordinated their language less with the rank and file, but usually only after about two months of adjustment to their new status.

In the Supreme Court, as expected, lawyers coordinate their speech to justices. But, say the researchers, there is another factor besides formal status that confers power: dependence. Speakers coordinate their speech with those who can do something for them. Lawyers generally go before the [Supreme Court](#) with an idea of which justices will be opposed to their cause, and the analysis showed that lawyers coordinated their speech more with justices who opposed them (as confirmed by the final vote). At the same time, opposing justices coordinated less with those lawyers.

As a sidelight, the analysis showed that female lawyers coordinated their speech with justices more than male lawyers, and justices coordinated

less with female lawyers. The researchers caution that this result may be influenced by other gender differences in communication style.

The researchers see applications of this type of analysis in studying the sociology of online groups, which previously has focused on structural features such as who talks to whom. "It is exciting to contemplate extending the range of social properties that can be analyzed via text," they concluded.

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