Study suggests link between word choices and extraverts

December 28 2020, by Junn Loh

Credit: CC0 Public Domain

A study by a team of Nanyang Technological University, Singapore (NTU Singapore) psychologists has found a link between extraverts and their word choices.

The finding highlights the need for stronger linguistic indicators to be developed for use in online personality prediction tools, which are being rapidly adopted by companies to improve digital marketing strategies.

Today, marketing companies use predictive algorithms to help them forecast what consumers want based on their online behaviors. Companies are also keen to leverage data and machine learning to understand the psychological aspects of consumer behavior, which cannot be observed directly, but can provide valuable insights about how to improve targeted advertising.

For example, an 'extravert consumer' might be attracted to marketing messages that match their personality, and retail brands could then choose to target such consumers by using more extraverted and creative language to advertise their products.

However, personality prediction tools available today that are used by marketing firms are not entirely accurate due to a lack of theoretically sound designs.

Principal investigator of the study, Associate Professor Lin Qiu from the Psychology program at the NTU School of Social Sciences said, "Current machine learning algorithms for personality prediction can seem like a black box—there are many linguistic indicators that can be included in their design, but many of them are dependent on the type of computer application used. This may lead to biases and overfitting, an error affecting the performance of the machine learning algorithms. This begs the question—how should we create robust and accurate personality predictions?"

The study found a corelation between extraverts and their tendency to use certain categories of words. The results showed a small strength of relationship between extraversion and the use of "positive emotion words" and "social process words."

Positive emotion words are defined by psychologists—using text analysis tools—as words that describe a pleasant emotional state, such as 'love," 'happy," or 'blessed," or that indicate positivity or optimism, such as 'beautiful' or 'nice." Social process words include words containing personal pronouns except "I," and words showing social intentions, such as 'meet," 'share' and 'talk."

"This is the first time a relationship has been established between extraverts and their tendency to use the two categories of words. As it is

a small correlation, we believe that stronger linguistic indicators are needed to improve machine learning approaches, amid rising interest in such tools in consumer marketing," Assoc Prof Qiu said.

The NTU team said the findings, which was published in the *Journal of Research in Personality* in December 2020, can provide marketers with well-founded linguistic predictors for the design of machine learning algorithms, improving the performance of software tools for personality prediction.

How the study was conducted

Previous individual studies reviewed by the NTU team have shown that extraversion, or the general tendency to experience positive emotions and enjoy social interactions, is related to the use of words described by psychologists as "positive emotion" or "social process" words. But the strength of this reported relationship has varied substantially between the different studies exploring it.

To establish the effectiveness of such linguistic predictors, the NTU team reviewed 37 studies looking at the same topic to conduct a meta-analysis. Extraversion was determined using internationally recognized personality type questionnaires.

Moving forward, the NTU research team will investigate the relationship between extraversion and other word categories.

While machine learning and predictive analytics can provide companies and marketers with an added advantage in their business strategies, more thought must be put into the design of such analytical models, the NTU research team said.

They hope their work will provide clarity on the types of words that can

help guide the development of more accurate machine learning tools for personality prediction.

Provided by Nanyang Technological University