The Power of Personality over Prose
            Written in Collaboration with others

Personality has been used to categorize people for decades, with beneficial and harmful results. Some people enjoy self-sorting based on personality and allowing it to validate and justify their actions and feelings, but personality tests can also be used prescriptively, to decide beforehand how someone is likely to act and judge them for their results. Prior research has shown that if people are primed with a marginalized identity they hold that has a stereotype associated with it, their performance will be impacted by the priming (Kit et. al. 2008). Stereotype Threat can be damaging not only to a person's self-esteem but also to their performance on tests and other measures. However, if the threat or stereotype is non-threatening, like a stereotype of how people with a certain personality act, do people still act in ways to confirm that stereotype?

We wanted to see if priming people to think about their personality would affect the way they describe themselves to another person. If someone unconsciously changes the way they write based on their personality, it could mean that any survey that asks people personality questions before the rest of the test could inadvertently be impacting someone's answers. For example, if someone is primed to think about the fact that they are an extravert, do they then answer questions in a way more stereotypical of an extrovert?

We are using the Ten Item Personality Inventory (TIPI) personality survey in this experiment, given its reliability for producing the same measure of personality over time (Gosling et. al. 2003). The TIPI measures the "Big Five" personality traits; which are extraversion, agreeableness, conscientiousness, emotional stability (neuroticism), and openness to experience. We predict that thinking about personality traits will make people write in a more

"traited" manner. For example, people who fill out the survey and rate low on extraversion might be more likely to write using fewer social words and after thinking about their introversion.

Our research question for studying language and personality is: How does being primed to think about personality traits affect the way a person writes? Is their writing more "traited" when primed with personality measures? We defined "traited" as using words that are associated with their personality traits as outlined in Yarkoni's "Personality in 100,000 Words: A large-scale analysis of personality and word use among bloggers." Our hypothesis is that people will be more likely to write in a way that reflects their personality measures if they take a personality measure beforehand.

We predicted the following based on Yarkoni's findings: Use of cognitive process words will be more present among those who score high on neuroticism and conscientiousness in the experimental condition; use of social process words will be more used by those who score high on openness, conscientiousness, and extraversion in the experimental condition; use of friend words will be more used by people who score high on extraversion and agreeableness in the experimental condition; and use of informal language will be used more by those who score high on extraversion and openness in the experimental condition. We also predicted Authenticity scores will be higher for those who score high on openness and extraversion in the experimental condition. Additionally, we predicted that function words associated with narrative thinking (personal pronouns, verbs, conjunctions) will be used more by people who score high on openness, extraversion, and agreeableness, whereas function words associated with analytical thinking (negations, causal words, quantifiers) will be used more by those who score high on neuroticism and conscientiousness (Pennebaker 2011).

Methods:

To pursue our research question, we designed a between-subjects study with two conditions. Each participant answered the following prompt "Please answer the following question using at least 200 words: How would you describe yourself to a potential new friend?" The experimental condition completed the TIPI personality scale before answering the writing prompt. The control condition answered the writing prompt and then completed the TIPI personality scale. We created our survey using Qualtrics, randomizing which version of the survey each participant collected. The survey took an estimated ten minutes to complete. We collected our responses using Prolific.

Despite setting the survey to equally distribute the control and experimental versions of the study, out of 102 responses, we ended up with unequal group sizes for experimental (N=56) and control (N = 46) conditions. This was likely due to an internal error in the survey. We collected 103 responses total, however one was removed because the participant did not write understandable sentences. Another issue with data collection was that many participants did not use 200 words, and the responses ranged from 43 words to 262 words.

Results:

We ran a two-way between-subjects ANOVA on each LIWC category of interest and the corresponding TIPI measure. We also ran the Bonferroni Post-Hoc test and collected descriptive statistics. We found main effects for percentage of cognitive process words by level of conscientiousness and condition. Cognitive Processing words were used marginally more in people with high conscientiousness than those with low conscientiousness, no matter their experimental condition ($F_{(1-102)}$= 3.195, p = 0.073, See Figure 1). Additionally, we found that the control condition uses more cognitive process words than the experimental, no matter their level

of consciousness ($F_{(1-102)}$= 3.282, p = 0.077, See Figure 1). We also found a marginal main effect in the percentage of cognitive processing words for condition regardless of level of neuroticism that parallel our result for consciousness ($F_{(1-102)}$= 3.128, p = 0.08). This suggests that overall, those in the control condition used more cognitive processing words, regardless of their personality.

We found a main effect of condition for use of informal language by level of extraversion ($F_{(1-102)}$= 3.952, p = 0.05). Those in the experimental condition tended to use more informal language than those in the control condition. We also found a marginally significant interaction between condition and level of extraversion ($F_{(1-102)}$= 3.87 , p = 0.052). Those with low extraversion in the experimental condition used significantly more informal language (see Figure 2). For all other LIWC measures there were no significant results.

To analyze function words associated with analytical thinking we averaged the categories negations, causal words, and quantifiers into a composite variable "analytical" and ran another two-way between-subjects ANOVA. We also created a composite variable "narrative" for words associated with narrative thinking from the categories personal pronouns, verbs, and conjunctions. However, we found no significant differences in the use of either type of function words between condition or personality.
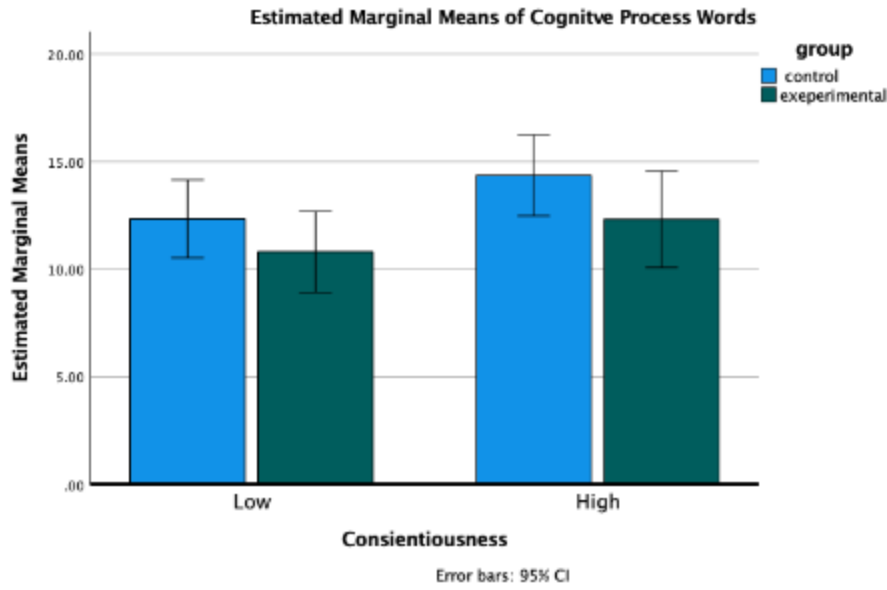
Figure 1

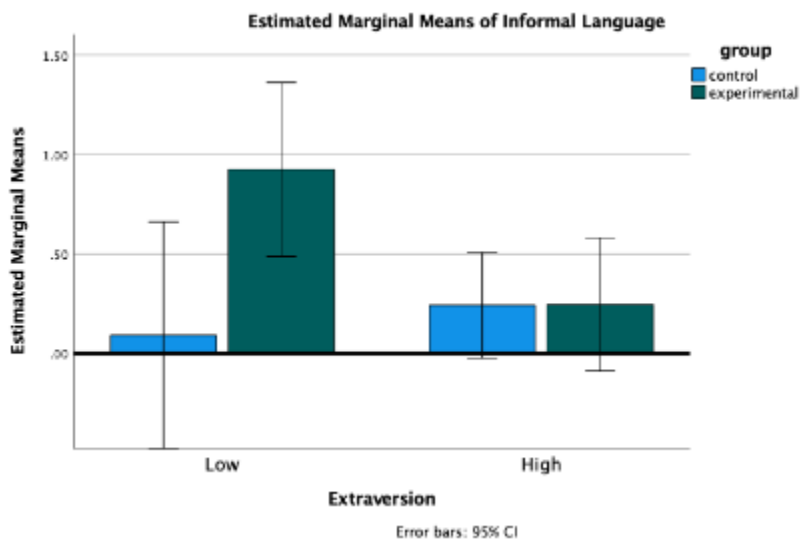*Percentage of cognitive process words by level of conscientiousness and condition.*

Figure 2

Percentage of informal language by extraversion and condition.

Discussion:

Our hypothesis was not supported by our data. There are several potential reasons for this. First, our question, "How would you describe yourself to a potential new friend?" probably caused all participants, regardless of personality traits or condition, to use friendly, social language. Additionally, self-presentation factors are at play in this question. Participants were likely trying to present themselves in the most favorable way, not necessarily the most accurate way, and this would impact their writing. Another flaw is that the way different personalities write or talk is not the most salient stereotype. We also had small, unequal group sizes, so we likely had insufficient statistical power for this study.

For our few marginally significant results, what we found was different or completely opposite from what we predicted. For extraversion and informal language, we predicted that extroverts in the experimental condition would use a higher percentage of informal language. However, we found that it was introverts who used more experimental language after being primed with personality traits. We can think of two reasons for this. The first is that part of the composite of informal language in LIWC is netspeak and swearwords. We think introverts are more likely to spend time online, and they might use more netspeak or swearwords because of this. It is pretty common for people to swear liberally and use netspeak in online chat rooms and platforms like Reddit or Twitter, and an online survey may bear some similarity to that form of socializing. Another explanation we thought of is, given the nature of the writing prompt, extroverted people might try and present themselves as best as possible to a new friend, meaning they would avoid informal language like netspeak or swearwords. More research would be needed to confirm these hypotheses.

One result that did support our hypothesis was that people who scored higher on conscientiousness did use marginally more cognitive process words. However, since we found no other significant results that supported our predictions we cannot say that people primed to think about how conscientious write in a more conscientious way. We also found a main effect of condition, which we did not expect. People in the control condition used more cognitive process words than those in the experimental. We think this is because people who weren't primed with personality traits had to think more about how to describe themselves.

If replicating this study, it might be helpful to increase the strength of the primer. For example, including statements in the experimental conditions that say things like "Extroverts are more likely to use informal language" or something along those lines. This would make the study more similar to classic stereotype threat studies. We might also add multiple types of prompts with different questions so that we are not as limited by one prompt's wording.

References:

Gosling, S. D., Rentfrow, P. J., & Swann, W. B. (2003). *A very brief measure of the Big-Five personality domains*. Elsevier BV. 10.1016/s0092-6566(03)00046-1

Kit, K. A., Tuokko, H. A., & Mateer, C. A. (2008). A review of the stereotype threat literature and its application in a neurological population. Neuropsychology Review, 18(2), 132–148. https://doi.org/10.1007/s11065-008-9059-9

Pennebaker, J. W. (2011). *The secret life of pronouns: What our words say about us.* Bloomsbury Press/Bloomsbury Publishing.

Yarkoni, T. (2010). Personality in 100,000 Words: A large-sc ale analysis of personality and word use among bloggers. *Journal of Research in Personality, 44*(3), 363-373. 10.1016/j.jrp.2010.04.001