No relation between vertical-valence metaphor and height: An empirical answer to Liu, Zhu, and Wang (2019)
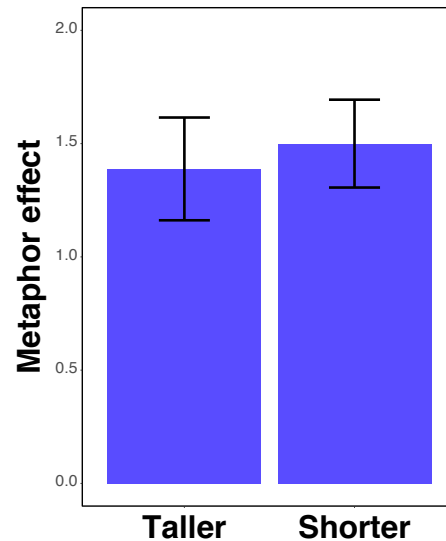
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Results of the survey. Error bars denote standard errors of the mean.

DESCRIPTION

We conducted a survey based on the idea of Liu, Zhu, and Wang (2019). They hypothesized that the association between vertical space and emotional valence (up = positive, down = negative; vertical-valence metaphor; e.g., Meier & Robinson, 2004) would interact with people's height. They predicted that this association would be weaker in taller people than in shorter people. We conducted a word rating task (Marmolejo-Ramos, Elosúa, Yamada, Hamm, & Noguchi, 2013) in online. In this task, subjects rated the words ''up'' and ''down'' on a Likert scale ranging from 1 (very negative) to 9 (very positive). We also asked them their height. The subjects were assigned to taller and shorter groups, respectively, according to their height. Moreover, we computed a *metaphor effect* by subtracting the score of down from that of up. We performed a two-tailed t-test on the metaphor effect between the taller and smaller group. As a result, there was no significant difference between the groups ($t(207) = 0.37$, $p = .71$, Cohen's $d = 0.05$). This result did not support the idea of Liu et al. (2019).

There were some differences in the protocol between the previous study and the proposal of Liu et al. (2019). First, we conducted online survey via crowdsourcing instead of laboratory experiment. Crowdsourcing is helpful for collecting large amount of data from various people (e.g., Sasaki, Ihaya, & Yamada, 2017; Yamada, 2015) and we used this for collecting the data from people with various height. Second, we conducted the rating task (Marmolejo-Ramos et al., 2013) instead of a Bob task (e.g., Casasanto, 2009) because the rating task was more easily conducted in the online survey than the Bob task. Third, our sample size was greatly larger than the planned sample size of Experiment 2 of Liu et al. (2019). The data of online survey is more easily contaminated by various noise (e.g., satisficing; Chandler, Mueller, & Paolacci, 2014) compared with laboratory experiments (Sasaki & Yamada, 2019) and thus we collected the data from larger sample size for controlling noise. Finally, we assigned the subjects to the taller and shorter groups based on the first and third quartiles, while Liu et al. (2019) planned to use the average height of American adult male (i.e., 69.3 inches) and female (63.7 inches). This is because we collected the data from people with various ages and the average height should be different to some extent among ages, while Liu et al. (2019) planned to collect the data from university students within a narrow rage of age.

We disclose the constraints on generality for this survey. The subjects were collected via Japanese crowdsourcing. Thus, nationality was not general. The task was only the rating task; it is unclear whether the similar results will be obtained when the task is different.

METHOD

Subjects We recruited 500 people via Yahoo! Crowdsourcing and 479 subjects participated in the survey. We inserted two attention check questions (ACQs) for detecting satisficers (Oppenheimer, Meyvis & Davidenko, 2009). We excluded

the data of 24 subjects because their answers to the ACQs were wrong. After excluding the data based on the answer to the ACQs, we assigned the subjects to two groups (taller and shorter groups). Those whose heights were over the third quartile (68.1 inches) within all the subjects' height were assigned to the taller group ($n = 103$). On the other hand, the subjects were assigned to the smaller group ($n = 106$) when their heights were under the first quartile (63.8 inches). We submitted these data of the two groups for statistical analyses. The subjects were fully informed about survey ethics and were not forced to participate in the survey. They got 22 T-points as reward.

Stimuli The Kanjis meaning "up" and "down" were used in the survey. Moreover, we presented two subtractions (i.e., "74 - 47" and "36 -19") as the ACQs.

Procedure The subjects rated the words "up" and "down" on a Likert scale ranging from 1 (very negative) to 9 (very positive) with the following instruction: "Assuming that the following words can have a valence that ranges from 'very negative' to 'very positive', what valence would you give to each word?". They also answered to the ACQs and reported their height.

DATA AVAILABILITY

The data used in the present study can be available at https://osf.io/3dpwu/.

AUTHOR CONTRIBUTIONS

Kyoshiro Sasaki: Data curation, Formal Analysis, Visualization, Writing – original draft
Yuki Yamada: Writing – review & editing

CONFLICT OF INTERESTS

The authors declare no competing interests.

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Nobody

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