

CORRELATION BETWEEN BRAIN HEMISPHERE DOMINANCE AND IN/EXTRAVERSION

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Introduction

- Little research has been done on any possible association between hemisphere dominance and personality traits such as an in/extraversion.
- We decided to test whether trait Introversion/Extraversion (I/E) would be associated with hemisphere dominance (HD.)
- Spere, et al. (2005) found that a lower level of brain hemisphere dominance is often reflected in a high level of sociability, and that a distinct hemisphere dominance might lead to an individual being more shy and introverted.
- Another study used resting state functional connectivity magnetic resonance imaging to evaluate the type of connections found in each brain hemisphere. They found that strong connectivity networks found in the left hemisphere of the brain are more active during tasks requiring perception of internal stimuli and language, whereas strong right hemisphere connectivity networks are more active during tasks requiring attention to external stimuli (Nielsen, Zielinski, Ferguson, Lainhart and Anderson, 2013)
- The researchers developed different hypothesis, with some predicting that no correlation would be found.
- Others hypothesised that there would be a significant correlation, and that left HD would be associated with introversion and right HD would be associated with extraversion, or vice-versa.

Method

Participants:

- 86 participants were randomly recruited; 49 females (56%), 33 males (38%), and 5 who chose "other" (6%).
- The sample comprised of participants from different cultures, careers, age groups, and backgrounds.
- Mean age for the participants was 22 years old; youngest participant was 18, and the oldest was 54.
- Participation in this research was entirely voluntary, anonymous, and was done through an online survey.

Measures:

- The survey first asked for age and gender, then proceeded to ask a set of multiple choice questions.
- Out of the 34 questions being asked, 12 of them measured their level of intro/ extraversion, while the rest focused on hemisphere dominance.
- Results of both measures were analyzed on a scale, rather than strictly introverted vs extroverted or strictly left or right brain hemisphere dominance.

Procedures:

- The online survey was created through Google Forms.
- Survey was sent out through social media and other online sources and individuals were told that participation is completely voluntary and anonymous, and that the survey would take approximately 10 minutes.
- Period of data collection lasted seven days, after which we analyzed the results, created a plot graph, and ran a correlation analysis.

Demographics

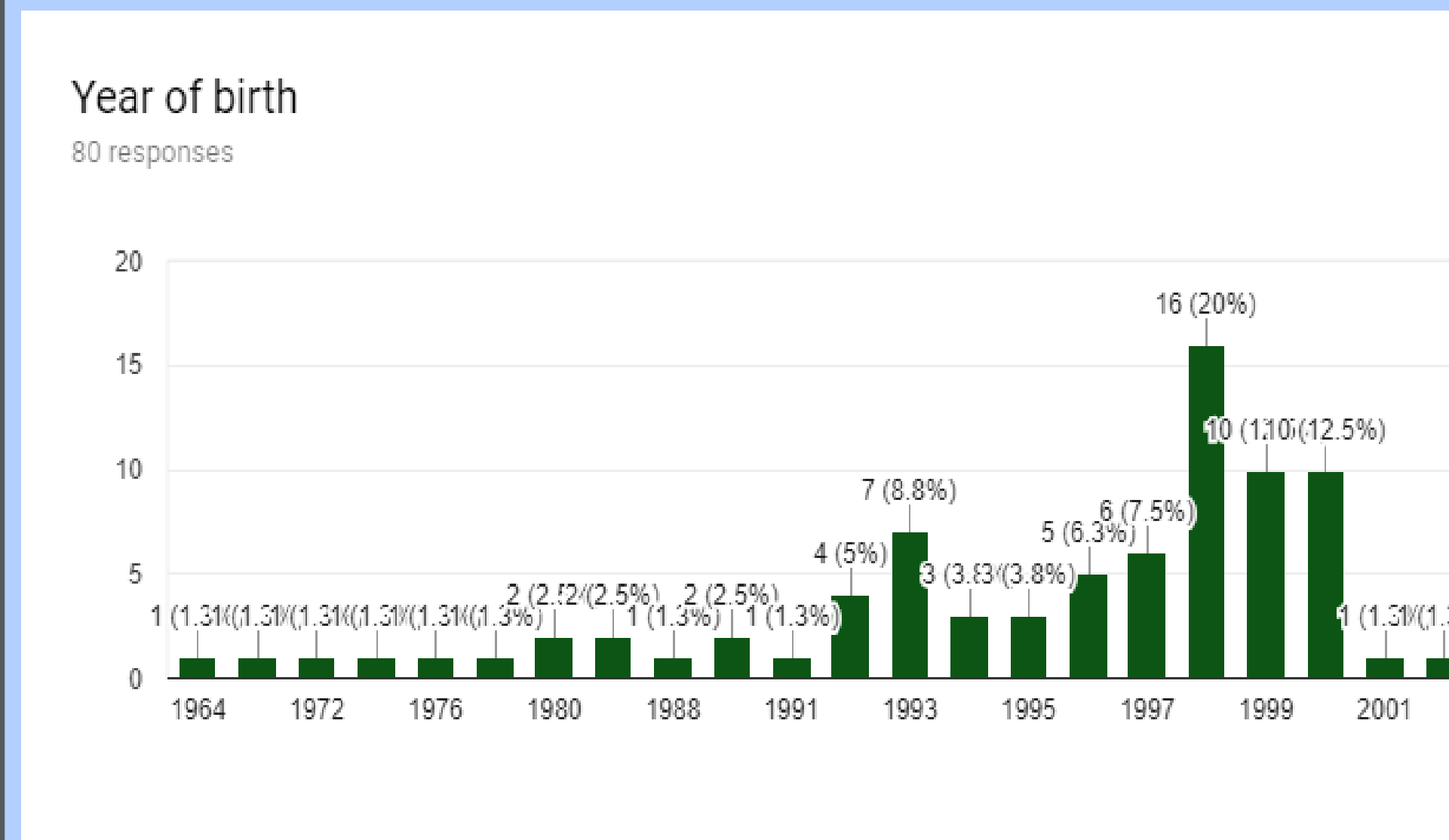


Figure 1. Histogram of Birth-Year Responses

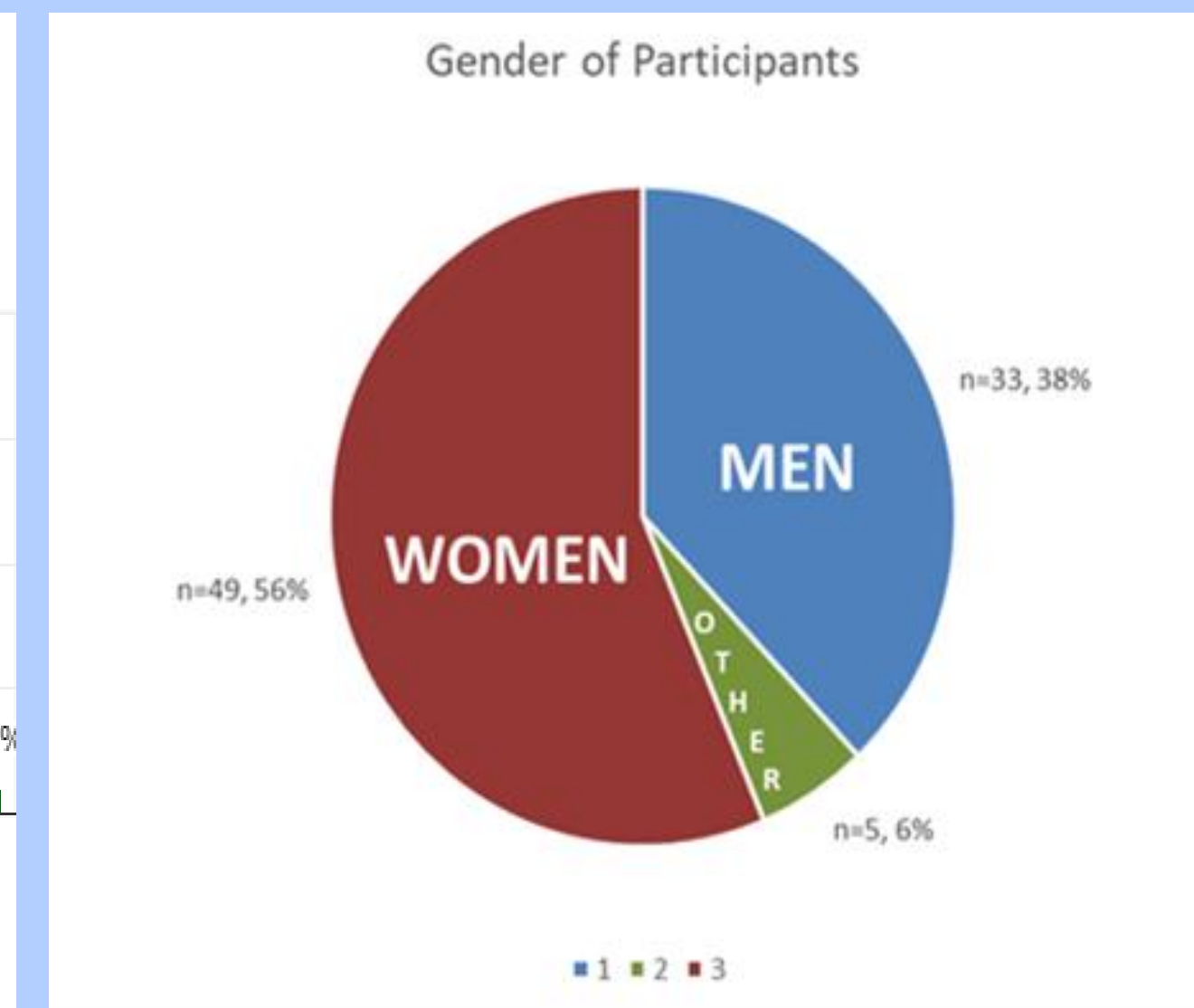


Figure 2. Pie Chart of Gender Responses

Results

- Average scores on introversion/extroversion and hemisphere dominance were computed for each participant, then mean scores of each variable were calculated:
- Introversion/Extroversion $M=2.8$ ($sd=0.7$)
- Hemisphere Dominance $M=9$.
- Next, a Pearson correlation was performed; results indicate no significant correlation ($r = -0.053$) between hemisphere dominance, introversion, and extroversion.
- Given the correlation of nearly zero, no two sample t-test was performed.

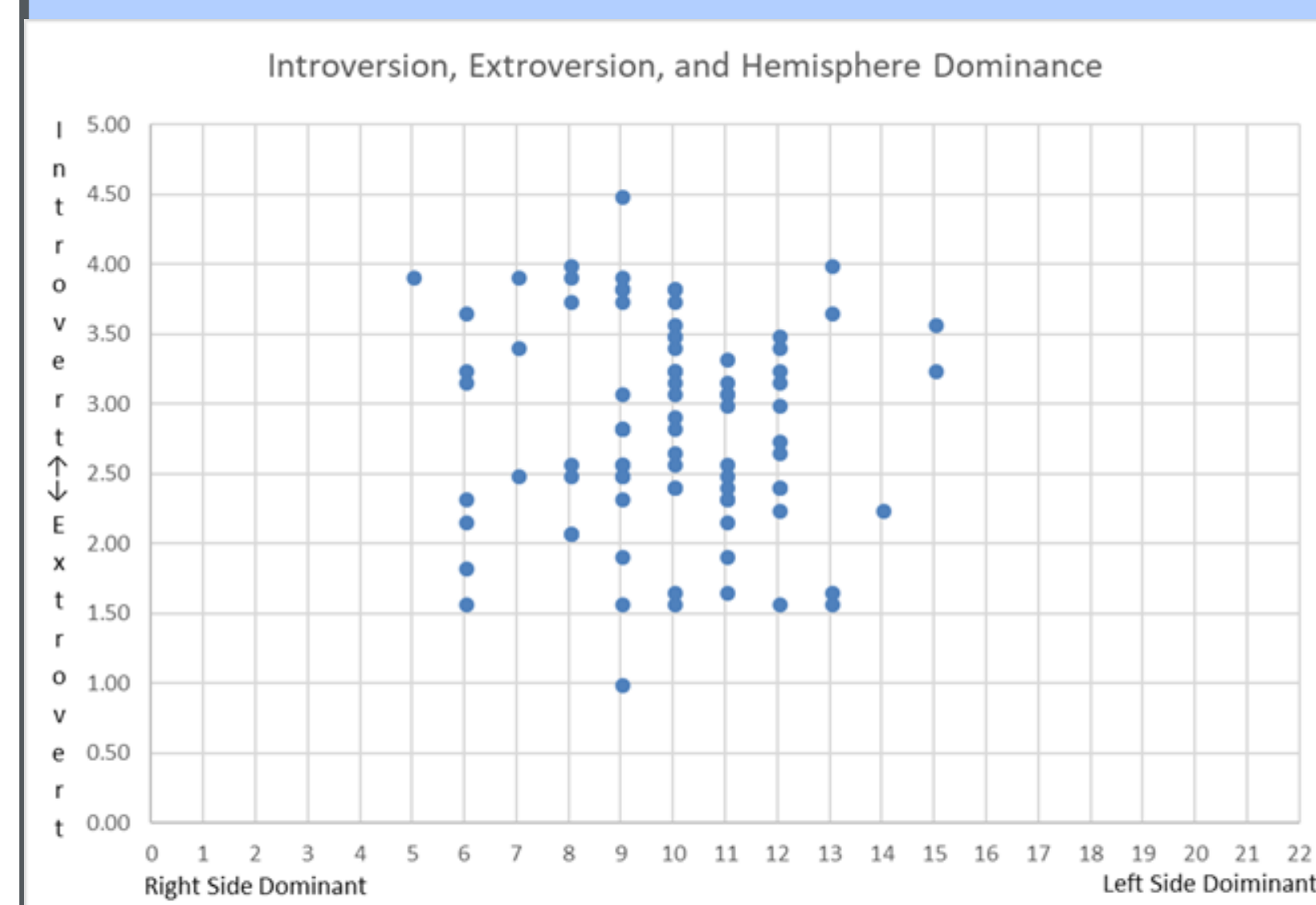


Figure 3. Hemisphere Dominance & Intro/ Extroversion Scatter Plot

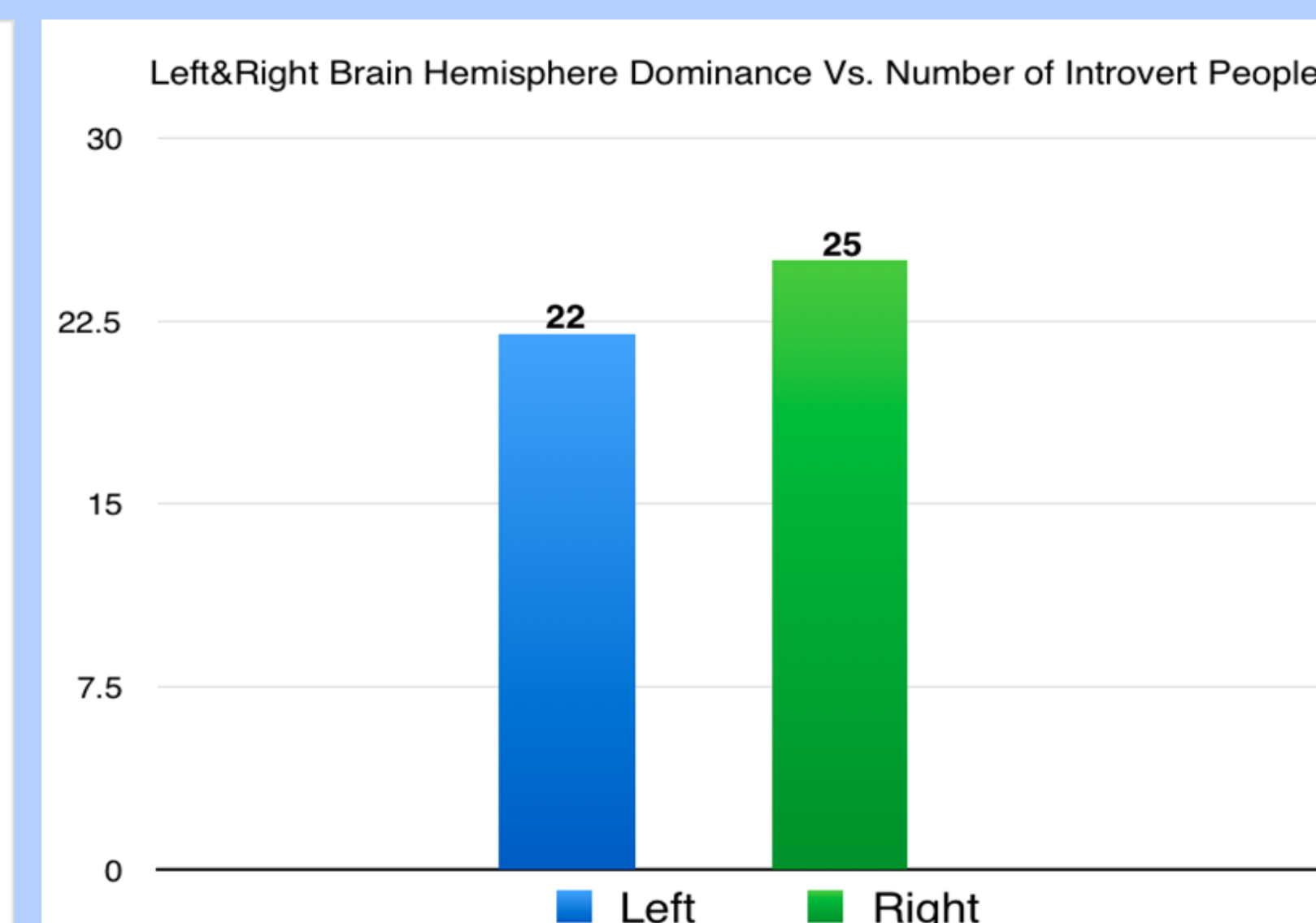


Figure 4. Left & Right Hemisphere Dominance vs Number of Introverts

For the full research paper, go to:

https://docs.google.com/document/d/12t0py74-ErmkgRSn1Oyzm2psCmLw23GouC-pP6ZJ_/edit?usp=sharing

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Conclusion

- The results from this study found no correlation between the brain hemisphere dominance of the participants and their level of introversion/extraversion
- Only our hypotheses that there will be no significant correlation between (HD) and (I/E) has been supported by our research
- Limitations of our research design include:
 - A better-reviewed, more reliable questionnaire would have improved internal validity.
 - External validity could be improved by different means of gathering participants in a more random, diverse manner:
 - Due to the lack of time and resources, the participants used in this study were reached out to through social media, and since the participants are people that we personally know, there might have been an unconscious bias in selection.
 - The manner in which we gathered participants resulted in most being from the same general geographic area, and with the vast majority being within the same age range (early 20's).
 - Recruiting participants from different locations, age groups, and backgrounds would have added to the external validity of the study by improving generalizability.
- Since our findings found no significant correlation between (HD) and (I/E), teaching format in classrooms should not depend on whether students are mostly introverted or extroverted based on the major being taught.

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