

IB Psychology Internal Assessment

**AN INVESTIGATION INTO HOW THE EXPANSIVENESS OF BODY LANGUAGE
CONTRIBUTES TO ONE'S PERCEIVED AUTHORITY**

Student Code: XXXXXX

Group Members:

- Partner's Code: XXXXXX

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INTRODUCTION

Having influence over others is an important part of success, especially when one's influence can compel others to act in accordance with their wishes. In this way, it can be insightful to study ways to be more influential. According to Vacharkulksemsuk et al. (2016) titled "Dominant, open nonverbal displays are attractive at zero-acquaintance", in other words, an open, expansive body language has greater success in courting influence during speed-dating. In this research, two main experiments were conducted. One conducted observation of speed dating participants to see how body language effected attractive success. The other was a controlled experiment where participants were shown pictures of others through a dating app where images of the same people were taken as either expansive or contractive, and the rate of matches of evaluated against their body language. Both these experiments revealed that the more expansive body language resulted in more matches/dating success. In other words, they find that open body language has more influence over others. This tendency can be related to the halo effect. The Halo effect is the idea that one's physical body language has effects on their dominance over others (Thorndike, 1920). We wanted to build on the methods of Vacharkulksemsuk et al. (2016) to modify and retest this experiment. We also wanted to investigate the effect of openness/contractiveness of body language's influence on one's authority but change it from a dating setting into a classroom setting. Essentially, we ask: Does the expansiveness or contractiveness of your body language effect the influence you have over others?

- Independent Variable: The amount of space that has been taken up by the teacher due to movement around a room.

- Dependent Variable: The response time of students in following a teacher's instructions; measured in seconds.
- Null Hypothesis (H_0): There is no significant correlation between an individual's body language/actions and the response times of students from the teacher's instructions.
- Research Hypothesis (H_1): Greater expansiveness of an individual's body language/actions leads to quicker response times from students.

EXPLORATION

Sampling

In designing the sampling strategy for our experiment, which focuses on assessing the impact of body language on perceived authority, we navigated the intricate dynamics of human relationships. Recognizing the multifaceted nature of authority, we identified three crucial factors that could potentially confound our results: age, gender, and background/status.

Firstly, age emerges as a pivotal determinant of authority, with older individuals typically enjoying a greater perceived influence over their younger counterparts (Reference needed). Acknowledging this, we aimed to control for age-related disparities by restricting our participant pool to individuals aged 16 to 18 years. This deliberate

choice ensures a more homogeneous age group, allowing us to isolate the effects of body language on authority without the confounding variable of age differentials.

Secondly, we delved into the role of gender in authority dynamics. Statistically, males tend to wield more influence in leadership-type situations (Reference needed). Additionally, we were acutely aware of the potential biases and stereotypes that could distort mixed-gender relationships. To mitigate these influences, we exclusively recruited male participants, ensuring a focused examination of the impact of body language on authority within this gender demographic. This decision aimed at preventing gender-related factors from obscuring our findings.

Thirdly, we considered the influence of background and status on authority dynamics, recognizing that diverse environments, cultures, and situations could introduce confounding variables. Striking a balance between diversity and selectivity, we opted to exclusively recruit participants from Lamar High School, our school. This approach minimizes the confounding effects of disparate backgrounds while maintaining a reasonably representative sample within the confines of our experimental setting.

To enlist participants, we leveraged word-of-mouth through acquaintances, accompanied by the incentive of signed volunteer hours for participation. Importantly, we took precautions to prevent information leakage about the experiment's objectives, hypothesis, or procedure. Only we (the researchers) and our teacher were privy to the

topic, ensuring the integrity and confidentiality of the experiment. By implementing these careful measures in our sampling strategy, we aimed to create a controlled environment that allows us to scrutinize the influence of body language on authority with a nuanced and focused perspective.

Materials:

- Screen or projector
- Laptops/tablets for each participant.
- Internet connection
- Private classroom

Procedure:

1. Pre-experiment:

- a. After gathering the full sample of participants, randomly select one participant for the role of “teacher”. All the remaining participants are “students”.
- b. Briefly interview the teacher to find something unique about themselves that they have some knowledge of.
 - i. For example, our selected teacher, GM, was from Spain, an uncommon characteristic from our school’s population, so we assigned him to teach about Spanish History.
- c. Create teaching materials.
 - i. PowerPoint with information and questions about the teacher’s subject.

1. Teacher’s Slideshow can be found in *Appendix 5*.

ii. Digital response form for the students to answer in.

1. Digital Response form can be found in *Appendix 6*.

d. Divide the students into two groups, one 'less expansive' group and the other as the 'more expansive' group.

2. Experiment:

a. On the first day, conduct the more expansive experimental group:

i. Set up the classroom for the presentation, teacher's walking area, and students' tables.

ii. Meet with teacher 10 minutes before the experiment starts to show them the PowerPoint and allow themselves to familiarize themselves with it. Ask them to 'teach nicely' by walking around and talking freely (activating open/expansive body language).

iii. Welcome in all the students to the classroom, tell them that they are about to be taught by the teacher. Explain to the students how they are to use the online submission link to answer the teacher's questions from the PowerPoint. Answer any questions without revealing the testing objective, then host a trial-run of the students responding to a question on the form.

iv. Let the teacher teach as per the presentation and their own knowledge. Ensure smooth operation of experiment with limited interference.

v. After the presentation is over, dismiss the students and teacher without further revealing of the experiment (to protect the integrity of the less expansive group).

- b. On the next day, conduct the conduct the ‘less expansive’ group:
 - i. Set up the classroom for the presentation, teacher’s walking area, and students’ tables.
 - 1. Same as before
 - ii. Meet with *same* teacher 10 minutes before the experiment starts to show them the PowerPoint and allow themselves to familiarize themselves with it again. Indicate/tell them, in a casual manner, to move around less this time (to less expansive body language).
 - 1. It is important not to give away the objective of the experiment when asking them to move around less. We talked with the teacher casually and told them to stay in a smaller area due to some hanging wires we rerouted for the screen.
 - iii. Welcome in all the students to the classroom, tell them that they are about to be taught by the teacher. Explain to the students how they are to use the online submission link to answer the teacher’s questions from the PowerPoint. Answer any questions without revealing the testing objective, then host a trial-run of the students responding to a question on the form.
 - 1. Same as before
 - iv. Let the teacher teach as per the presentation and their own knowledge. Ensure smooth operation of experiment with limited interference.
 - 1. Same as before

v. After the presentation is over, dismiss the students and teacher without further revealing of the experiment.

1. Same as before

c. After experiment

i. Send out a post-experiment participant survey to the teacher and students.

ii. After surveys are filled, debrief the participants on the full details of the experiment and answer any questions as applicable.

Measuring:

There are two main measurements we need to take: expansiveness and authority (response times).

In terms of expansiveness, this is our independent variable. Since we have some control over the expansiveness during Step 2 of both the more and less expansive groups, we will not need to directly measure expansiveness with any unit, instead, we just must make sure that difference in body languages is qualitatively significant between the two trials.

For authority/influence, we measure question response time. This is because authority is an abstract, intangible quality. There is no way to directly measure authority, but we wanted some quantitative, accurate, and precise proxy. In order to be quantitative, it had to result in some numeric measurements. For the proxy to be accurate, it has to be closely related to the extent of authority one exerts over someone else. To be precise, the format of measurement had to be electronic. With these criteria in mind, we measured

influence by measuring the students' response times to the teacher's questions. This is because Google Forms measures submission times to the accuracy of seconds. In this way, we assume that the teacher's greater authority influences response times of questions to be shorter because the students will be more obedient/respectful to the teacher's wishes.

One great benefit of this strategy is the limited human error in the process. As long as the students understand how to respond, the researchers have to do almost no work to count accurate response time measurements. Another benefit of this strategy is that the questions' content doesn't matter! Since we are only measuring authority, the students' actual understanding of the topic or getting the response correct is not important to the study. The only reason our questions are related to the presentation is to not raise suspicions amongst the participants (making them believe that the accuracy of the response is what matters where it's really the response time we're tracking). One disbenefit of this system is that the quality and length of the responses must be ignored. This is because, asking for lengthy, thoughtful responses would cause too much variance between person-to-person based on typing speed and knowledge.

Overall, the response-time measurement proxy of influence served us well.

Other Controls

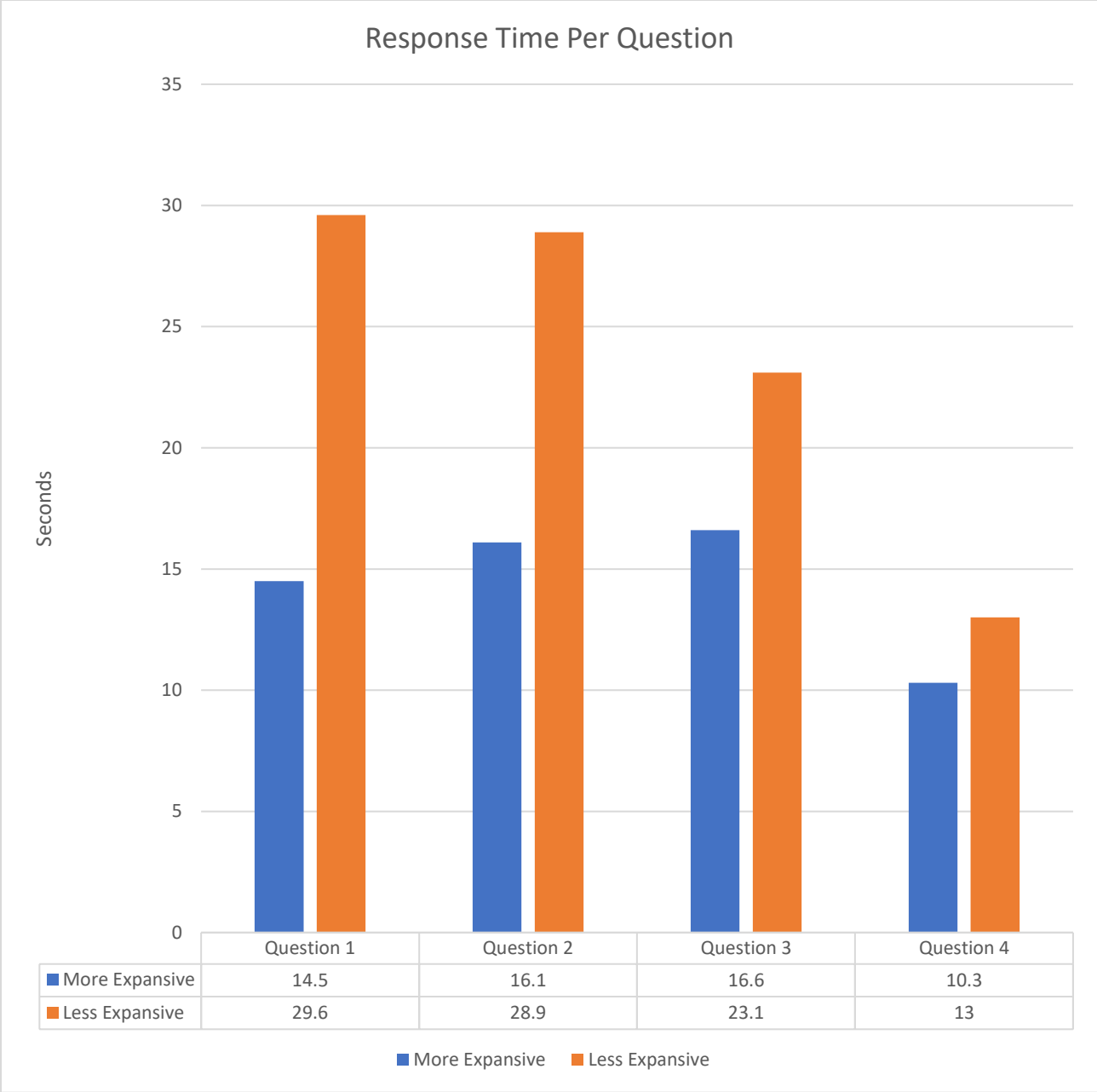
- Teacher
- Time of day
- Classroom
- Presentation and questions

ANALYSIS

From the above procedures and guidelines, we were able to gather 13 volunteer participants (meeting the aforementioned sampling criteria). This means we have one teacher and 6 students in each experimental group.

After extracting response times from the Google Forms response sheet, we processed the raw data to extract the relevant information. The raw data can be found in *Appendix 1*. Due to the simplicity of procedure and measuring in this experiment, only the mean times for each question in each control group were needed to be calculated. There are no further statistics of central tendency, dispersion, regression, etc required to interpret the data.

Here were the results:



This chart shows how less expansive body language from the teacher has a significant impact in increasing response times, assumed to relate with decreased authority (as established in Exploration, Measuring). In this way, our data rejects the Null Hypothesis because we find a clear positive correlation between expansiveness in body language and influence over others.

EVALUATION

The results of this study, mainly being that more expansiveness of one's body language quickens the response times of students, likely indicating an increase of influence over others, follows with the findings of Vacharkulksemsuk et al. (2016) and the Halo Effect (Thorndike, 1920).

A result like this is very promising for real world applications, particularly in domains where interpersonal influence and authority play pivotal roles. Although this experiment only tested for a classroom, teacher-student relationship, our consistent findings suggest that individuals who strategically adopt open and expansive postures may effectively enhance their persuasiveness, dominance, and authority across various contexts.

In professional settings, such insights could be leveraged to improve leadership and communication skills. Executives, managers, and team leaders may benefit from incorporating expansive body language into their repertoire to project confidence and authority during presentations, negotiations, and team interactions. Training programs aimed at enhancing interpersonal skills could integrate our findings to empower individuals with a tangible tool for navigating hierarchical dynamics and fostering collaboration.

In educational contexts, educators may consider incorporating strategies adopt more expansive body language like walking around the class when lecturing. This would likely allow for teachers to gain more influence over their students, letting them teach more effectively.

Even in daily life, one may adopt a habit of open body language to be more authoritative and influential in their day-to-day interactions.

Despite these promising applications our study did have weaknesses in sample size, repeated trials, and control experimentation.

Our study had a total sample of 13 out of which only 12 gave relevant data (one is the teacher). This sample size is much too small for any meaningful generalization. This limitation is further propagated by the fact that our sampling demographics were so restrictive. For example, we have no results from females, no results from adults, small children, etc.

Additionally, our study did not perform repeated trial for each configuration to reduce random variance in our results.

Lastly, our study was not able to incorporate a control group. This was mainly because of our low sample size not allowing enough people in a dedicated control group. This control group would have helped us further solidify any inferred cause-effect relationship between the body language and the authority over the students.

APPENDIX

Appendix 1: Raw Data

Control Group Response Times (Seconds)				
	Question 1	Question 2	Question 3	Question 4
Participant 1	29	12	8	3
Participant 2	33	14	9	8
Participant 3	35	29	13	11
Participant 4	62	47	21	14
Participant 5	86	82	54	28
Participant 6	98	68	59	37

Control Group Response Times (Seconds)				
	Question 1	Question 2	Question 3	Question 4
Participant 1	3	12	8	29
Participant 2	8	14	9	33
Participant 3	11	29	13	35
Participant 4	14	47	21	62
Participant 5	28	82	54	86
Participant 6	37	68	59	98

Appendix 2: Debriefing Email

Dear Participants,

We extend our gratitude for your contribution to our research as part of our IB Psychology Internal Assessment. Your participation has played a crucial role in exploring the intriguing dynamics of body language and perceived authority. This email will provide a comprehensive overview of our study, including its aim, methodology, and the insights gained.

The aim of the study was to investigate the impact of body language expansiveness on perceived authority and individual engagement (measured through response times). Specifically, we sought to understand whether more open and expressive body language, as opposed to controlled and constrained movements, influences an individual's ability to command authority over others and promote focused engagement.

In our methodology we employed a double-blind experimental design, dividing participants into two groups: a control group and an experimental group. The experimental group experienced teaching sessions from a participant (randomly chosen) demonstrating either expansive or constrained body language. Through your Google Form responses, we measured the response times to questions posed during these sessions, using this metric as a proxy for the teacher's perceived authority. The data revealed a notable trend; participants responded more quickly and provided higher quality answers when interacting with a teacher exhibiting more open and expressive body language, as seen through our graph picturing the standard deviations, suggesting a significant correlation between expansive body language and increased perceived authority.

Should you have any questions, wish to discuss the study further, wish to withdraw your data from our analysis, or have any other concerns (ethical treatment of data included) please contact us directly at [EMAIL ADDRESS REDACTED]. Thank you once again for your support and contribution to our exploration of body language and authority, you may request a finalized report to be sent once the study is completed.

Sincerely,

[RESEARCHERS' NAMES REDACTED]

Appendix 3: Informed Consent Form

Consent Form

Dear Participants,

This consent form originates from [REDACTED] and [REDACTED] two students from [REDACTED] in [REDACTED] IB Psychology (SL) course. We are very thankful and grateful for your compliance to participate in our IB Psychology IA Experiment, which we will release information upon completion of gathered data.

The experiment will take place in the backroom next to the lab of [REDACTED] on December 8th and 11th, 2023. The experiment only requires your participation in a history lesson by a randomly selected student teacher, in which you will listen to his class and will respond to a few questions presented. You must bring a charged laptop and be there by 11:50 AM.

It must also be noted, that you are guaranteed the anonymity of your name and personal information, which will not be shared to any other student, school, teacher, or organization such as IB. You also are guaranteed the right to withdraw from the experiment at any moment due to any reason found significant that may go against your principles, law, or comfort. Lastly, you will be debriefed on the investigation and results compiled once all experimentation and data collection is completed.

* Indicates required question

1. Email *

2. First and Last name *

3. If you agree to participate and have read the explanation of this study, along with all * information above, please sign below

Appendix 4: Briefing/Standardized Instructions

To all participants (Control and Experimental Students, as well as Teacher):

Thank you for participating in our psychological study, your contributions are invaluable but please be assured that your identity, along with all responses, will be kept confidential and used solely for academic purposes. You have the right to withdraw from this study at any point without any consequences. At the conclusion of our experiment and data processing, you will be debriefed on the results of our experiment.

Instructions for Students (Both Groups):

Today, you will participate in a historical lesson focusing on Spanish History. During this lesson, the teacher GM, will ask various questions for you to respond after informational slides. Please respond to the questions on the google form we have sent to your email. Repeat the submission for each individual question. After the lesson, we ask all participants to complete a brief survey about your experience. This feedback is crucial for our study. If there are no further questions, the lesson may begin with GM.

Instructions for Selected Teacher During Control Group:

For today, we've provided a slideshow on Spanish History for you to be familiar with and teach to the best of your ability. We encourage you to deliver the content in a manner that feels natural to you, and request for you to ensure a comprehensive understanding of the subject matter. Introduce yourself and begin teaching the lesson in a thoughtful and charismatic manner.



The Reconquista (711-1492)



- The gradual Christian reconquest of the Iberian Peninsula from Muslim rule.
 - Culminated in the capture of Granada in 1492 by Ferdinand II of Aragon and Isabella I of Castile.
-

—

Write 'True' or 'False': Was the land Spain is on initially ruled by Muslims?

—

Year of Discovery (1492)

- The amazing Christopher Columbus, sponsored by the Catholic Monarchs, reaches the Americas.



—

Write one sentence about why Spain is significant to Columbus' adventures.

The Spanish Golden Age (16th & 17th)



- A period of flourishing arts, literature, and exploration.
- Amazing works of writers like Miguel de Cervantes and painters like Diego Velázquez.

Write some small description of why this period was called the 'Spanish Golden Age'.

The Spanish Armada

- Spain's superior naval fleet, the Armada, is defeated by the English navy.
- Marks the decline of Spain as the most dominant European power.



—

**Write 'True' or 'False':
The Muslims took
revenge by defeating
the Spanish Navy.**

THE END

Thanks for joining




Don't forget to sign off on attendance!

—

Appendix 6: Digital Response Form

Psychology Experiment

Note your response from the slideshow here.

[Redacted] [Switch account](#) 

* Indicates required question

Email *

Record [Redacted] as the email to be included with my response

Response: *

Your answer

[Clear form](#)