

Science Education Collection

The Multi-group Experiment

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Overview

Source: Laboratories of Gary Lewandowski, Dave Strohmetz, and Natalie Ciarocco—Monmouth University

A multi-group design is an experimental design that has 3 or more conditions/groups of the same independent variable. This video demonstrates a multi-group experiment that examines how different interethnic ideologies (multiculturalism and color-blind) influence feelings about diversity and actions toward and out-group member. In providing an overview of how a researcher conducts a multi-group experiment, this video shows viewers how to distinguish levels in variables, common types of conditions/groups to use (including placebo and empty-control conditions/groups), the process of conducting the study, the collection of results, and the consideration of their implications.

Procedure

1. Introduction of topic/research question

1. Research question: People are unique and different, yet mostly the same. When it comes to interacting with other ethnicities, which perspective is better? We could focus on and appreciate our differences (a multicultural perspective), or focus on the many similarities we share (a color blind perspective). If one is more effective, does it have to be explicit (*i.e.*, does the person need to realize it)? The researcher then forms a hypothesis based on educated guesses about potential answers.
2. Research Hypothesis: Those who are exposed to the multicultural perspective will display more favorable attitudes toward an outgroup member than those who are exposed to the colorblind perspective.

2. Key variables

1. Variable: Anything that changes in a study
2. Independent variable: The cause or what the researcher manipulates/changes in order to detect changes in the participant
3. Based on the hypothesis, interethnic ideology is the independent variable.
4. Dependent variable: The effect or the outcome that the researcher measures in the participant
5. Based on the hypothesis, attitudes toward an outgroup member is the dependent variable.

3. Defining the variables

1. Interethnic Ideology: To manipulate the independent variable of interethnic ideology, have participants perform a word search (so that participants will not explicitly know they are being exposed to the different ideologies).
2. Attitudes toward an outgroup member: To measure the dependent variable of perceived attractiveness, have the participant choose a seat (near or far from the outgroup member).

4. Establishing conditions

1. Levels: The independent variable's number of conditions or groups
 1. In simple experiment, there are two levels (experimental group and control group).
 2. In a multi-group experiment, there are more than two levels.
2. Potential conditions/groups
 1. Two or more types of treatment (such as this study)
 2. Placebo
 3. Empty-control groups (included in this study)
3. Experimental Conditions: Groups who receive different types of the key ingredient
 1. Multicultural Group: Word search with multicultural terms, as well as 5 distractor words to minimize hypothesis guessing
 1. Hypothesis guessing: When a participant actively tries to figure out what the study is about, which can lead to unnatural responses
 2. Color Blind Group: Word search with color blind terms, as well as 5 distractor words (same ones as the multicultural group) to minimize hypothesis guessing
4. Placebo Condition: A condition that doesn't receive any treatment, but participant's believe they are

1. Though we do not include one in this study because participants likely won't realize that they are in an experimental group, a placebo condition is often useful if we want to see how participants act if they believe they are receiving a treatment, but actually aren't. Placebo groups generally help us get a handle on how participants' expectations influence outcomes in our dependent variable.
5. Control Condition: This group does the same thing as experimental groups without the key ingredient.
 1. They will do a word search with common everyday words that aren't associated with multicultural or colorblind perspectives.
6. Empty Control Condition: A group that does not receive any type of treatment or "key ingredient." This provides a baseline that shows how participants act without any treatment.
 1. They will not do any word search.

5. Confounds

1. What it is: Anything the researcher accidentally changes along with manipulation
2. Its importance: The presence of a confound makes it impossible to know if the treatment or "key ingredient" is responsible for the changes in the dependent variable.
3. Application to study: In the present study, the researcher must be careful that the word searches are all as similar as possible. If one had 10 words to find, while another had 5, that would be a confound. If one was on white paper, while another was on yellow, that would be a confound.

6. Measuring the dependent variable (attitudes toward an outgroup member)

1. Seat choice
 1. Key measurement considerations: Need to set up 8 chairs in a room with the outgroup member's belongings on the far left chair. This gives the participant 7 seats to choose from.
 2. Higher score indicates more positive attitude toward outgroup member (**Table 1**).

Chair with Belongings	Empty Chair	Empty Chair	Empty Chair	Empty Chair	Empty Chair	Empty Chair	Empty Chair
	7 points	6 points	5 points	4 points	3 points	2 points	1 point

Table 1. Point distribution based on seat choice. More points are given to the chair chosen near the outgroup member's belongings.

7. Conducting the study

1. Setting = Research lab and adjoining room with 8 chairs
2. Informed consent
 1. In a research lab, meet the participant for study on "Word Searches."
 2. Go through informed consent: "Here is the informed consent, which outlines what the study is basically about, any risks/benefits of participation, and lets you know that you are free to quit at any time."
3. Random assignment to condition
 1. Randomly order the packets so that the participant's condition (multicultural, colorblind, control, or empty control) is not based on anything other than chance. Otherwise, the researcher may subconsciously be more likely to assign certain participants (e.g., those who look physically fit) to certain conditions (e.g., running).
4. Running the study
 1. Give participant randomly assigned word search (need to highlight the words they are searching for to show the ones associated with multicultural and colorblind, as well as the distractor words—in italics. The word search for the control group contains all mundane words.
 1. Multicultural: culture, variety, difference, diversity, multi, *flowers, stars, artistic, world, music*
 2. Color-blind: equality, unity, sameness, similarity, blind, *flowers, stars, artistic, world, music*
 3. Control: practical, relaxed, logic, creativity, friendship, *flowers, stars, artistic, world, music*
 4. Empty Control: nothing; Say you ran out of word searches for the first part.
 2. Measure of attitudes toward an outgroup member
 1. Escort participant to adjoining room for Part 2.
 2. "For the next part of this study, you are going to work together with the following partner (hands participant a picture) on additional word search tasks. They've already arrived, but had to run out to their car to get something. Please have a seat."
 3. Walk to a different part of the room and note the participant's seat selection.
5. Debriefing
 1. Explain the purpose of the study to the participant: "Thank you for participating. In this study I was trying to determine if different interethnic ideologies influenced attitudes toward someone different than you. Specifically, I focused on a multicultural perspective, which is the idea that we should celebrate differences and the colorblind perspective, which is the idea that we should ignore

differences and focus on shared similarities. I manipulated those based on the words participants searched for in Part 1. There were also control groups, one who searched for neutral words, and one who didn't search for any. Do you have any questions?"

6. Address deception.

1. Explain: "It is important that we get a natural performance, not one that the participant feels is expected. If participants were to know the true reasoning and hypothesis behind the study, they may perform in an unnatural way by trying to live up to the experimenters' perceived expectations. To eliminate this problem, it is necessary for me to mislead you about the true nature of the word search and the fact that there was an outgroup member who you were paired with in Part 2. In actuality, the word searches were part of my manipulation and there wasn't anyone in Part 2. Rather, we used the same picture of another participant for everyone. Because of the nature of how we did the study, it is quite natural for participants to have believed there was another person, but rest assured there wasn't."

Results

After collecting data from 88 people, perform a one-way analysis of variance (ANOVA) comparing the four conditions/groups (multicultural, colorblind, control, and empty control) to see how they influenced attitudes toward the outgroup member. As shown in **Figure 1**, those in the multicultural group had the most favorable attitude compared to all other conditions.

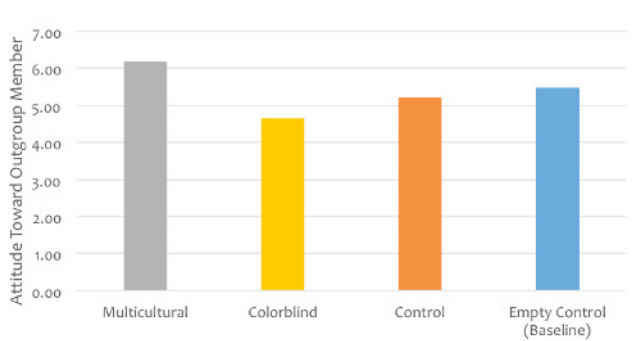


Figure 1. Mean attitudes toward outgroup member by interethnic ideology condition. The attitudes were based on the averages of seating choices.

Applications and Summary

The results of this study replicate previous research showing the benefits of a multicultural perspective. This study adds to existing literature by showing how it can be manipulated in a non-explicit way and can influence an overt behavior like choosing where to sit.

Considering the potential benefits of seeing others' differences, it is easy to see how this might apply in a variety of contexts such as attitudes toward sexual minorities, anti-bullying efforts in schools, divorce mediation, and perhaps even in international relations. It also suggests a more general need to recognize and appreciate differences rather than ignoring or avoiding them.