The Effects of Demand Characteristics in a Student Population

Honors Thesis (HONRS 499)

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I would like to thank Dr. Kristin Ritchey of the Department of Psychological Sciences for advising me in this project. She has been supportive of my efforts in conducting my first psychological experiment and helpful in the process of editing the paper to improve its quality.
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Abstract

The concept of demand characteristics asserts that people's beliefs and behaviors can be influenced by cues in the environment or given by others. The altered responses can be either conscious or unconscious. This experiment looked at the responses of seventy-five undergraduate students and studied how participants scored on an empathy questionnaire when one group was given instructions that were designed to influence their responses. It was predicted that the group receiving the manipulated empathy instructions would have a higher overall empathy score than the group who were asked only to answer a personality questionnaire. There was no significant difference in the scores between the two groups. These results may indicate that people are not as susceptible to demand characteristics, or that empathy cannot be influenced as easily as some other traits.
The Effects of Demand Characteristics in a Student Population

Demand characteristics are cues or signals that prompt people to behave in a certain way. They are present in everyday activities, but are especially problematic for experimenters. In experiments, the goal is to measure some characteristic, evaluate some behavior, or seek to quantify some change in the participants. Demand characteristics, however, may disrupt these results or make them invalid altogether. After conducting an experiment, especially if the results were unexpected, the researchers will attempt to explain the responses by looking for demand characteristics. The purpose of this experiment was to attempt to elicit demand characteristics from the student participants. It was the idea that, perhaps unconsciously, people can change how they would normally answer if they are manipulated in some way. If this experiment would yield the expected results, it could give researchers a better understanding of how much significance should be placed on demand characteristics.

Orne (1969) was an early researcher looking at demand characteristics. He identified what he called “demand characteristics of an experiment,” (Orne, 1969, p.146) and believed that there were specific cues that control or change experiences. In experiments, these include what the experimenter hopes to find and what the participants believe is expected. According to Orne, every experiment has demand characteristics, although they do not automatically affect the results or outcome of the experiment.

Several researchers and studies have looked directly at demand characteristics. These experiments have usually attempted to manipulate the
demand characteristics in some way to see if the participants alter their responses in any way. In any experiment, the participants’ thoughts and perceptions about an experiment may affect their behavior in the assigned task. Whether this is the result of conscious or unconscious behaviors is not always clear. The participants may have some knowledge of what the possible results will be from the questions they are asked or the behaviors they are required to perform (Orne, 1969).

Many participants desire to help the experimenter prove their hypothesis, according to Orne (1969), and so will try to answer in the way they think the experimenter wants. They want to have the “good” or “right” responses. He also pointed out the fact that most participants volunteer to participate, and revealed some reasons or motivations that would cause them to. The participants may want the experiment to work, or are interested in the results, which would cause them to be more motivated. Other participants are required to for credit, and then would be less motivated to pay strict attention. For this reason, experimenters have been obliged to come up with certain methods to neutralize this effect, mostly using some sort of deception.

Orne (1969) decided to conduct an experiment testing these ideas on demand characteristics by deliberately manipulating some demand characteristics in an experiment. He was interested to see if he could really change participants’ responses by his manipulations. The experimenters gave two groups of volunteering students a lie detector test. One group was informed that the lie detector does not notice or detect lies in pathological or chronic liars, and was
The Effects of

asked to attempt to fool the machine. The hypothesis was that this group would want to be detected lying to prove they were not pathological liars.

The second group was told that while it may be hard to deceive the lie detector, very clever, mature people could fool it, thus increasing their desire to try and deceive the lie detector and prove they were part of the highly intelligent group. Orne (1969) found that the participants who were in the first group, the one that wished to be detected lying, were indeed detected by the machine to be lying. The second group, who wanted to fool the machine and not be caught lying, was in fact caught lying, showing that demand characteristics may result in psychological change but cannot produce physical change. On subsequent trials, this group actually made fewer responses overall, and therefore it was difficult to detect their lies. Orne (1969) concluded from these results that manipulating demand characteristics can produce altered outcomes.

In closing, Orne (1969) reveals that while demand characteristics may alter certain responses in the experimental setting which are relevant to the experiment, demand characteristics are not designed to change overall attitudes and beliefs of the participants. Orne’s research was instrumental in the further study of demand characteristics. He labeled demand characteristics and produced many studies regarding it. His study of students involving the lie detector manipulated demand characteristics, as many studies later, including this one, have attempted to do.

There have been many experiments which attempt to determine if demand characteristics alter behaviors and responses. Derlega, Chaikin, and Herndon
(1975) studied demand characteristics in the context of disclosure reciprocity. In many studies, contact and interaction with others prior to the experiment may alter the responses the participant would have made. Derlega et al. manipulated this interaction. The participants for this study, all female, were asked to wait in a room before the experiment was supposed to begin. Half of the participants for this study were told that in the experiment they would be asked to talk about themselves, while the other half were told nothing. In the outer room, a confederate of the experiment began talking spontaneously to the participant. She would either discuss intimate or superficial topics. Later, the participants were asked to rate the intimacy level of the confederate. When participants were given no instructions about the experiment, the intimacy level was rated as lower than in the other group, where participants were told what the experiment entailed. Apparently just being told that the participants would have to talk about themselves in the experiment affected their perception of the confederate’s intimacy. This experiment supports the concept that demand characteristics can alter responses, and can be manipulated.

Another study examining the effects of demand characteristics was Harvey and Siprelles’ (1976) research on the obvious and subtle subscales of the Minnesota Multiphasic Personality Inventory (MMPI). The subscales of Depression, Psychopathic Deviate, Paranoia, Hypomania, and Hysteria on the MMPI were divided into groups known as the Subtle and Obvious groups. Different scores on each of the groups have implications; high S (subtle) scores can indicate successful life endeavors while high O (obvious) scores can indicate
failure in life. Harvey and Siprelle (1976) designed this experiment to test the idea that people taking the MMPI would respond to the items in a way that seems socially desirable and acceptable to the experimenter rather than how they actually feel.

Participants in Harvey and Siprelle's experiment were divided into groups. One group was told to visualize they were applying for a job, while the other group was told to imagine they were going to be assessed for psychotherapy. The participants were then told a prize would be given to the two participants in each group who scored highest for their particular condition. The experimenters predicted that the Obvious scores would be higher for the group assessed for psychotherapy, and the Subtle scores would be higher for those applying for a job. In other words, participants would alter their responses to fit better into each group. Those applying for a job would want to seem better, so would try to enhance the better aspects, while those seeking psychotherapy would want to exaggerate the more negative aspects of their personality.

The results of the experiment did in fact support their hypothesis (Harvey & Siprelle, 1976). Participants in the job application group scored higher on the subtle scales, while the psychotherapy group scored higher on the obvious scores. Again, these results support the idea that manipulation of demand characteristics can alter results. In this case, the manipulation was of the groups the participants were told they were in. The participants' expectations of how they thought they were being evaluated affected how they represented themselves the personality test.
There are many different situations in which manipulating demand characteristics can alter the results of a study. Widner, Smith, and Graziano (1996) studied the tip-of-the-tongue phenomenon. The tip-of-the-tongue phenomenon occurs when a person feels like he or she knows the response, but cannot remember it. The researchers examined these groups by giving participants a questionnaire. One group received instructions that the questions were very easy to answer, while the other received instructions that they were very difficult questions. The researchers believed that telling participants the questions were easy would make them feel compelled to identify tip-of-the-tongue feelings more frequently in an attempt to show they were able to answer the easy questions. They felt that informing the participants the questions were difficult would make them less reluctant to identify tip-of-the-tongue feelings, since there would be no embarrassment in admitting they did not know the answer.

The group who were told the questions would be very difficult reported a lower frequency of tip-of-the-tongue feelings than the other group. The other group receiving instructions that the questions were easy answered more frequently. These participants may have felt more pressure to respond and may have reported the feeling of tip-of-the-tongue when there was actually only a slight feeling. There was no difference in the number of correct answers between the two groups. There was actually a difference in how many times the participants in the two groups reported tip-of-the-tongue feelings. Those told the questions were easy reported more impressions of the phenomenon than the group
told the questions were difficult. This means that the demand characteristic of the instructions was effective in altering the frequency of responses.

Bjorklund et. al (2000) identified demand characteristics when looking at eyewitness memory and suggestibility throughout several interviews. Participants watched one of two videos dealing with a theft. Researchers afterward gave the participants a recognition test. A later interview was conducted by either the same experimenter or a different one. Bjorklund et. al believed that being interviewed by a different person would reduce the desire, either conscious or unconscious, for consistency. The researchers actually found that the rate of recognition errors was higher when interviewed by a different experimenter. The demand characteristic in this situation was the interviewer, and changing the interviewer actually changed the results of the second interview.

St. Claire and Turner (1982) studied demand characteristics in social categorization. After looking at pictures and picking the pictures they liked most, participants were placed into two groups. In the next part of the experiment, participants were given booklets about distributing hypothetical money in their groups. The final phase of the experiment placed the participants into one of three groups. One group was told the experimenter was studying decision making; a second group was told the experimenter was studying predictions in decision making; a final group was told that the experimenter was studying prejudice in decision making. The researchers predicted that the group given the prejudice instructions would perceive more prejudice in the distribution of money than the other groups when tested.
St. Clair and Turner (1982) found that there was no difference in the amount of perceived prejudice in the group who was told the experimenter was studying prejudice. The reason for this result may be that the instructions were too subtle for the prejudice group to detect, or perhaps the entire experiment was too complicated.

An interesting study of demand characteristics and juror honesty was conducted by Marshall and Smith (2001). In voir dire, potential jurors are questioned by the lawyers and the judge, to ascertain whether or not they are qualified to sit on the jury. Potential jurors are expected to be impartial and fair, and may temporarily take on these roles from cues they receive from their environment. Marshall and Smith (2001) identify several possible demand characteristics present in voir dire. These include the physical environment of the courtroom, which can be imposing, the gravity of the situation, the oath jurors take in which they swear to be honest, and the cultural and social beliefs and commitments.

To test the influence of these demand characteristics, the researchers mailed questionnaires to citizens who had been on a jury. They were asked to evaluate their experience of voir dire. Participants were asked questions about the above-mentioned demand characteristics. The questions asked about how much the juror felt the influence of the demand characteristics, with answers from “none” to “a lot”. They were also asked questions about their amount of honesty in their answers while attempting either to be on a jury or to be excused.
The results showed that the demand characteristics in the voir dire setting did not affect the honesty as reported by the participants. The researchers point out that the participants may well have reported more honesty than they actually demonstrated in voir dire due to embarrassment. The results of this study were inconclusive in determining the effects of demand characteristics. However, just because results were not as expected in this situation does not mean that demand characteristics are not in play in voir dire and other court settings.

This current study was an examination of demand characteristics dealing with an empathy questionnaire. The questionnaire used was from Davis’s 1980 study, “A multidimensional approach to individual differences in empathy.” One group received basic instructions to answer the questionnaire, while the instructions for the empathy group were manipulated. The prediction was that the group receiving the manipulated empathy instructions would demonstrate more empathy and score higher on the empathy scale than the other group.

Davis’ questionnaire focused on four elements or subscales of empathy. The first element is “fantasy,” which involves the penchant for being drawn in and imagining oneself in fictional circumstances. A second subscale is “perspective-taking,” which examines the capability of people to move outside their own character when dealing with others. A third subscale is “empathic concern,” which measures one’s degree of kindness, consideration, and concern for others. The final element is “personal distress,” which deals with one’s feelings of uneasiness and anxiety when experiencing negative events happening to others.
Method

Participants

The participants of this study were 75 undergraduate students who completed this experiment as part of the requirement to complete an introductory psychology course.

Materials

Participants in each group were given a questionnaire on empathy, which was taken from Davis (1980) (see Appendix). The control group was read instructions for a “personality survey,” while the experimental group received altered instructions for an “empathy survey.” The surveys were the same, save the title on top, which read either “Questionnaire” or “Empathy Questionnaire.” The survey consisted of 28 questions. This survey was the only material given to the participants during the experiment.

Procedure

For this experiment, participants signed up online to take a “personality survey.” Participants were tested in four groups of approximately 25 people. The groups were randomly assigned to the empathy or control groups, with two groups in each condition. Participants were first read the instructions. The control group received standard instructions requesting that they answer the questions on the questionnaire. The experimental group received modified instructions designed to alter the amount of perceptible empathy. The instructions included the following sentences. “You will be asked questions about your level of empathy, or sympathy and feeling for others. You are part of a larger group of
people being given this questionnaire. It is my hypothesis that college students have more empathy than other groups of people."

The participants were then asked to fill out the questionnaire, noting how well twenty-eight items described their personality. The experiment lasted approximately twenty minutes, although the participants how as long as they needed to complete the survey. After the experiment was concluded, the experimenter debriefed the participants. They were told the purpose of the study and the concept of demand characteristics was briefly explained to them. Participants were assured that the experiment was designed to study demand characteristics and did not predict how much empathy they had toward others. The experiment was only testing the responses that were made to the earlier instructions.

Results

This experiment tested the idea that specific instructions given to the participants would alter their responses and those in the empathy group would exhibit more empathy in their answers because of the instructions given to them. It was predicted that the group given the empathy instructions would have higher overall scores on Davis's (1980) empathy survey.

The total scores for the two groups were compared, as were the scores on the four subscales of "fantasy," "perspective-taking," "empathic concern," and "personal distress." First, the scores of the empathy group and personality group on the fantasy scale were compared. There was no significant effect between the two groups on this scale, \( t(73) = -0.58, p = .56 \). Second, the scores of the empathy
group and personality group on the perspective-taking scale were compared. There was also no significant effect between the two groups on the perspective-taking scale, $t(73) = -.09, p = .92$. Third, the scores of the empathy group and personality group on the empathic concern scale were compared. There was no significant effect between the two groups on this scale, $t(73) = 1.00, p = .32$. Lastly, the scores of the empathy group and personality group on the personal distress scale were compared. There was no significant effect between the two groups on the personal distress scale, $t(73) = 1.27, p = .20$. The total scores from the empathy group and the personality group were compared. Overall, there was no significant effect in the total scores between the two groups, $t(73) = .42, p = .67$.

**Discussion**

This experiment was designed to study whether demand characteristics can be elicited through specific instructions given to the participants. It was predicted that the participants would alter their responses when given instructions informing them of what the experimenter was supposedly seeking to find. It was believed that the participants' answers would reflect more empathy, and so their empathy scores would be higher, when told the experimenter believed they were more empathetic than another population. This change in responses could have been either unconscious or conscious. The results of this experiment did not support this hypothesis. No significant differences were found between the group who received the empathy instructions and the group who did not.
These results seem to be inconsistent with previous research on demand characteristics. Other research has found that people do change some behavior or response when exposed to some demand characteristics. There are several possible explanations to account for the lack of significant difference in the empathy scores of the two groups. An obvious one may be that the instructions given to the empathy group were too subtle. The instructions alone may not be enough to attain a change in empathy levels. The attribute of empathy may be too difficult to manipulate in an experimental classroom setting. The amount of manipulation required to alter someone’s amount of empathy might need to be a great deal more severe in order to see noticeable differences.

A second potential reason for the lack of expected results is the timing of the survey in the semester. All students in the introductory psychology class are required to participate in experiments. Due to the later date, it is probable that the more highly motivated and higher achieving students had already completed their requirements. This may have been a factor in affecting the results if the students were not motivated to participate completely or fully attend to the instructions.

Another possible explanation for these results may be cultural. The vast majority of the participants in the experiment were Caucasian American. It may be that characteristics like empathy are consistent or do not vary a great deal within certain populations. Although studies of personality differences across culture show that in general, people possess the same five basic personality traits (McCrae, 2001), when cultures are compared on specific aspects of personality, like how we conceptualize the “self,” differences emerge (Markus & Kitayama,
1994). Therefore, future research may show cultural differences in the specific aspect of empathy as well.

Although differences between the two groups were not found in this experiment, it does not diminish the need to study demand characteristics further. Other characteristics, such as intimacy levels, juror honesty during voir dire, the tip-of-the-tongue phenomenon, scores on MMPI tests, and the wish to be caught by a lie detector test have been studied in the past, and demand characteristics have been shown to have affected them. Studies of topics like stress or anger would be interesting to attempt to induce, although there would be various ethical considerations involved. One implication from this research may be that demand characteristics, while obviously a concern, may not be as influential as some believe.
References


Appendix

Instructions to be read for

"Personality Survey"

In this experiment, you will be asked to answer a short questionnaire. You will be allowed as much time as you need to read and answer the questions.

When you are finished, please turn your questionnaire over and wait for final instructions by the experimenter.

Please do not put any identifying information such as name or social security number on any part of the questionnaire.

If you have any questions at any time during the questionnaire, please raise your hand.

Do you have any questions?
Instructions to be read for

“Empathy Survey”

In this experiment, you will be asked to answer a short questionnaire. You will be asked questions about your level of empathy, or sympathy. You are part of a larger group of people being given this questionnaire. It is my hypothesis that college students have more empathy than other groups of people.

You will be allowed as much time as you need to read and answer the questions.

When you are finished, please turn your questionnaire over and wait for final instructions by the experimenter.

Please do not put any identifying information such as name or social security number on any part of the questionnaire.

If you have any questions at any time during the questionnaire, please raise your hand.

Do you have any questions?
Questionnaire

Respond to each of the following questions by circling the appropriate number.

0 = does not describe me well  4 = describes me very well

1. When I am reading an interesting story or novel, I imagine how I would feel if
the events in the story were happening to me.

2. I really get involved with the feelings of the characters in a novel.

3. I am usually objective when I watch a movie or play, and I don’t often get
completely caught up in it.

4. After seeing a play or movie, I have felt as though I were one of the characters.

5. I daydream and fantasize, with some regularity, about things that might happen
to me.

6. Becoming extremely involved in a good book or movie is somewhat rare for

7. When I watch a good movie, I can very easily put myself in the place of a
leading character.

8. Before criticizing somebody, I try to imagine how I would feel if I were in their
place.
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<tr>
<td>9. If I’m sure I’m right about something, I don’t waste much time listening to other people’s arguments.</td>
<td>0</td>
<td>1</td>
<td>2</td>
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<tr>
<td>10. I sometimes try to understand my friends better by imagining how things look from their perspective.</td>
<td>0</td>
<td>1</td>
<td>2</td>
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<td>11. I believe that there are two sides to every question and try to look at them both.</td>
<td>0</td>
<td>1</td>
<td>2</td>
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<tr>
<td>12. I sometimes find it difficult to see things from the “other guy’s” point of view.</td>
<td>0</td>
<td>1</td>
<td>2</td>
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<tr>
<td>13. I try to look at everybody’s side of a disagreement before I make a decision.</td>
<td>0</td>
<td>1</td>
<td>2</td>
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<tr>
<td>14. When I’m upset at someone, I usually try to “put myself in his shoes” for a while.</td>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>15. When I see someone being taken advantage of, I feel kind of protective towards them.</td>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>16. When I see someone being treated unfairly, I sometimes don’t feel very much pity for them.</td>
<td>0</td>
<td>1</td>
<td>2</td>
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17. I often have tender, concerned feelings for people less fortunate than me.

18. I would describe myself as a pretty soft-hearted person.

19. Sometimes I don’t feel very sorry for other people when they are having problems.

20. Other people’s misfortunes do not usually disturb me a great deal.

21. I am often quite touched by things that I see happen.

22. When I see someone who badly needs help in an emergency, I go to pieces.

23. I sometimes feel helpless when I am in the middle of a very emotional situation.

24. In emergency situations, I feel apprehensive and ill at ease.

25. I am usually pretty effective in dealing with emergencies.

26. Being in a tense emotional situation scares me.
27. When I see someone get hurt, I tend to remain calm.

0 1 2 3 4

28. I tend to lose control during emergencies.

0 1 2 3 4
This project was the result of a desire to learn about demand characteristics and the effect they have on experiments. I have been interested in this topic since taking PSYSC 284: Research Methods in Psychology.

This was my first experience in conducting my own experiment. It was also an opportunity to work on and improve my writing and research skills, which I will need in graduate school and possibly in any career job in the future. Finally, this project was a chance to expand my knowledge in the field of psychology.