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Introducing Psychological Research

By Phil Banyard and Andy Grayson

This document reproduces one of the summaries of key papers that are included in *Introducing Psychological Research*:

[Orne, M.T. \(1962\)](#). On the social psychology of the psychological experiment: With particular reference to demand characteristics and their implications. *American Psychologist*, 17, 776-783.

Demand Characteristics

Orne, M.T. (1962). On the social psychology of the psychological experiment: with particular reference to demand characteristics and their implications. *American Psychologist*, 17, 776-783.

Introduction

When somebody asks you to take part in a psychology experiment, how do you behave? The paper by Orne looks at this question and suggests that our behaviour immediately changes when we are given this request. His review article begins with a brief discussion of some of the social psychological characteristics of the psychology experiment. It moves on to a discussion of 'demand characteristics', examining what they are, how they might affect research findings, and what can be done about them. The paper includes a number of references to both informal and formal psychology experiments conducted by Orne and his colleagues.

The psychological experiment as a social situation

The experimental situation is one which takes place within the context of an explicit agreement of the subject to participate in a special form of social interaction known as 'taking part in an experiment' (p.777).

Orne's first point is that the psychological experiment, involving as it does an interaction between experimenter(s) and subject(s), should be regarded as a social situation. In other words a psychology experiment always takes place in a particular social context. In everyday life we expect people's behaviour to be affected by the social contexts in which they find themselves. For example imagine that you are in a pub, a church, a football ground, and a shopping centre. If someone bumps into you in the shopping centre, you are likely to say "Well really!", but at a football ground you wouldn't even notice it. In a church if someone put a plate in front of you then you might put money in it, but if

the plate appeared in a pub you might flick your ash in it. Orne argues that the psychology experiment is not exempt from this principle: the behaviour of subjects in an experiment will be affected by the social context created by that experiment.

One feature of any social context which can be expected to have an affect on behaviour is the relationship between the people involved. In an experiment the proceedings are dominated by the experimenter-subject role relationship. There are characteristics of this relationship which make the psychological experiment a particularly potent and rather unusual social situation.

For example, within this role relationship experimenters find themselves with an unusual degree of power over their subjects. This is partly because in agreeing to take part in an experiment in the first place the subject:

implicitly agrees to perform a very wide range of actions on request without inquiring as to their purpose, and frequently without inquiring as to their duration (p.777).

Orne gives the following examples of subjects' "remarkable compliance" (p.778) to the demands of an experimenter. They are taken from informal pilot experiments which he and his colleagues carried out. The first involved a psychologist asking a few acquaintances for a favour. When they agreed they were asked to do five press-ups. Their reaction tended to be to ask 'why?', with a degree of puzzlement. Another group of acquaintances were asked if they would take part in an experiment. When they agreed they were asked to do five press-ups. Their reaction tended to be to ask 'where?'. This suggests that people are prepared to do things as subjects that they would not normally be prepared to do in other social contexts.

The second example of compliance is startling. Subjects were set a task which involved them making 224 additions of random digits on each of 2,000 sheets of paper. Their watches were taken away and the experimenter told them to continue working until they were told to stop. "Five and one-half hours later, the experimenter gave up!" (p.777), amazed at the unquestioning diligence of the subjects. In a variation on this task subjects were instructed to do the calculations on each sheet, then to tear up their answer sheet into at least 32 pieces before continuing with the next one, which was also to be torn up (and so forth). Again subjects tended to continue for several hours at this completely senseless task, simply because they were 'doing an experiment'.

Orne argues that one reason for people's willingness to do things in an experiment that they would not normally do otherwise is their desire to be 'good' subjects. Generally speaking, subjects want to help the experimenter do a good experiment; we all like to be involved in things which are successful. In addition, since a large proportion of psychological studies are carried out on students, the subject population may also tend to share the goals and values of experimenters in terms of the quest to further human knowledge and thereby to make a positive contribution to society.

What are demand characteristics?

The totality of cues which convey an experimental hypothesis to the subject become significant determinants of subjects' behaviour. We have labelled the sum total of such

cues as the 'demand characteristics of the experimental situation' (p. 779).

The insight that the psychology experiment is a kind of social situation is an important one, since it reminds us that the subjects of psychological research are usually people. People do not just passively respond to things that happen to them. They actively try and make sense of what is happening, and act in accordance with their sense-making. There is no reason to assume that people-in-experiments are any different in this respect to people-in-any-other-kind- of-situation. This implies that subjects will tend to try and understand what is going on in the experiment that they are in, and their behaviour will be affected by whatever understanding they come to.

The most important thing that subjects will try to understand in an experiment is 'what is this person (the experimenter) trying to find out from me?'. In other words, 'what is the experimental hypothesis?'. Orne argues that subjects will automatically use whatever cues are available in the experimental situation in order to try and work out the experimental hypothesis. The cues can come from a variety of sources, such as the wording of instructions, the manner of the experimenter, the experimenter's known area of research (remember that many psychology experiments are done with students on the experimenter's course!), and so forth. The procedure is another source of information for the subject:

...if a test is given twice with some intervening treatment, even the dullest college student is aware that some change is expected, particularly if the test is in some obvious way related to the treatment (p.779).

We all want to know what is expected of us in social situations, and we tend to act in accordance with our understandings of those expectations. The experimental hypothesis is literally an expectation of how subjects will act in the experimental situation. If subjects come to know the hypothesis, then their behaviour will tend to support it.

The point that Orne is trying to make is that the behaviour of subjects in experiments is a function of two different kinds of variables:

(a) those which are traditionally defined as experimental variables and (b) the perceived demand characteristics of the experimental situation (p.779).

If experimenters are not careful they may interpret their findings as being a consequence of their manipulation of the independent variable(s), when in fact the data have been artificially produced by the demand characteristics of the situation. Mix the power of the experimenter with a large helping of subject compliance; add some desire to be a good subject; season with some active sense-making, and you have a recipe for a self-fulfilling prophecy (see Rosenthal and Jacobson, 1966).

Orne gives examples of demand characteristics in operation in the findings of psychological research from his own fields of interest; sensory deprivation research and research into hypnosis. He cites one of his own studies (later published by Orne & Scheibe, 1964) which shows some of the dangers. One group of subjects were told they were in a sensory deprivation study. They undertook a series of tasks, signed release forms and were left on their own in a room which had some visible trappings of

sensory deprivation (including a red 'panic' button) for four hours. However the experimenters had not created any sensory deprivation at all. Another group of subjects were told they were control subjects in a sensory deprivation study. They did the same series of tasks and sat in the same room for four hours (only with the panic button removed). Both sets of subjects then repeated the original tasks. The performance of the subjects who thought they had undergone sensory deprivation had deteriorated significantly on a number of the measures in comparison with the control group.

The subjects in the sensory deprivation condition appeared to have a very good idea, at least subconsciously, of the way they were expected to behave. Their behaviour promptly confirmed these expectations. Orne argues that many of the results of sensory deprivation (and hypnosis) studies could have been produced not by sensory deprivation (or hypnosis) but by demand characteristics; that is by people behaving in the way that they believe they are expected to.

What can be done about demand characteristics?

It is futile to imagine an experiment that could be created without demand characteristics. One of the basic characteristics of the human being is that he will ascribe purpose and meaning even in the absence of purpose and meaning. In an experiment where he knows some purpose exists, it is inconceivable for him not to form some hypothesis as to the purpose, based on some cues, no matter how meagre... (p.780).

When experimenting on people demand characteristics are unavoidable, because people will always try to make sense of things. The most popular way of counteracting any systematic influence of demand characteristics in an experiment is by means of deception. Experimenters put a lot of effort into concealing the true purpose of their experiment from their subjects by trying to convince them that they are really studying something completely different. Milgram's work (in chapter 1 of this volume) is one notable example of this strategy. But deception has its own drawbacks. There are ethical problems with misleading people, and besides, many people (especially psychology students) know that experimenters will try to deceive them, and will inevitably try and work out the true purpose of the investigation.

Orne's preferred method of dealing with demand characteristics is to encourage experimenters to be aware of their potential impact on research studies, and to suggest some strategies for assessing what this impact might be. If we can come to understand which aspects of subjects' behaviour are affected by demand characteristics, then we should be able to assess more accurately which aspects are affected by the bone fide experimental variables.

One strategy that Orne recommends in this respect is a kind of simulation exercise based on a combination of pre- and post-experimental inquiry. A group of subjects (drawn from the same population as the subjects in the experimental and control conditions) are told about the experimental procedures and asked to guess the hypothesis. They are then asked to behave in a way that they believe subjects would behave after having been given the experimental treatment without actually receiving the treatment. If the behaviour of these subjects correlates with the behaviour of subjects who had received the real experimental treatment, then there is a possibility that that behaviour has

been produced by the demand characteristics of the situation.

Orne's basic message is that when the subjects of our research are people we should be aware that they are active sense-makers rather than passive responders. This awareness should effect the way that research is designed and the way in which findings are interpreted.

Questions

[Questions appear at the end of each summary]

1. Demand characteristics are regarded as a source of 'artefact' in behavioural research. What does the word artefact mean in this context?
2. How can the behaviour of people in demonstrations of stage hypnosis be explained by demand characteristics?
3. Look at some psychological research studies that you are familiar with. Can the results be attributed to demand characteristics? Look especially at the quotation from page 779 of Orne's paper about giving a test twice 'with some intervening treatment'. How does this relate to Samuel and Bryant's (1984) investigation of conservation in children (see chapter 11 of this book)?

Suggested Answers

[Suggested answers appear at the back of the book]

1. Some kinds of behavioural outcomes of experiments can be artificially produced by the demand characteristics of the situation, rather than by the manipulation of the independent variables. Artefact in this context denotes false, artificial, misleading findings about human behaviour, which tell us a bit about how people behave in experiments, but not much about how they behave in more normal situations. In such cases the ecological validity of the research is said to be low.
2. It can be argued that people have an idea about how they should behave under hypnosis. Most people have seen others who have apparently been hypnotised, and know the kinds of things that are expected of a hypnotised person. The behaviour of people in hypnosis stage shows may be attributable to them acting out these expectations (responding to the demand characteristics of the situation) rather than to any real effects of hypnosis. Orne has conducted much research into hypnosis and demand characteristics (see Orne, 1966).
3. Samuel and Bryant's (1984) study directly addresses one of the demand characteristics of Piaget's original conservation tasks. For every study ever undertaken in psychology it is worth asking 'what demand characteristics are in play here?'

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