

Reporting psychological research: what is missing from the methods sections of British psychology?

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This article is offered as a contribution to the audit of psychological research in two of the premier journals of the British Psychological Society. It is informed by past research into the conduct of psychology, and raises issues of concern for psychologists. Previous work has identified a range of concerns about the continuing problems within psychological research. These problems include, the selection of samples, the incomplete reporting of methods, statistical errors and misunderstandings, and questions about the foundations of the discipline. In this article we consider only the selection of samples and the complete, or otherwise, reporting of methods.

Sample selection

Over the past forty years there have been a number of reports highlighting the use of students as the sample for psychological studies (Christie, 1965; Henley & Savage, 1994; Higbee, Millard, & Folkman, 1982; Higbee & Wells, 1972). A substantial review of this issue by Sears (1986) found that even in 1985 the major journals in American social psychology were predominantly reporting work conducted on students in laboratories. The review found 82% of the research studies used student samples, and 51% of all samples were drawn from psychology students. Furthermore, 78% of the studies were conducted in laboratories and just 22% were conducted in a natural habitat.

An analysis of articles in the British Journal of Psychology and the British Journal of Social and Clinical Psychology (Cochrane & Duffy, 1974) considered whether researchers had taken account of the various methodological criticisms raised during the 1960's. The analysis found that three quarters of the non-clinical studies used samples of students, and less than 15% of the studies reported on any attempt to test the representativeness of the sample. So, not only did the research largely rely on student samples, it relied on non-representative samples of students. Only 1 in 20 of the studies discussed deficiencies of sampling and their possible implications for the results of the research. The report also identified other deficiencies in the reporting of research and the analysis of results.

Further work confirmed problems with using student samples in British Psychology (Newstead, 1979). For example, experiments on selective attention, on lexical decision making, and on visual search tasks all produced different results with student and non-student adult samples. Newstead concluded that although student samples can provide a testing ground for hypotheses, 'we require more evidence on the extent to which these results might differ with other populations.' (page 385).

Other problems with sample selection

As well as the general problem of selecting students there are further problems concerning the particular students involved in the research and the way they are selected. For example, research has found that,

- students who take part in studies for extra course credits have particular characteristics (Henley & Savage, 1994),
- students who volunteer at the beginning of the semester differ from those who volunteer at the end (Cooper, Baumgardner, & Strathman, 1991),
- students who volunteer for after class data collection have different cognitive styles to students who volunteer for in-class data collection (Spirrison, Gordy, & Henley, 1996)
- knowledge of the researcher creates a coercion bias in student samples (Francis & Stanley, 1991).

These analyses lead some psychologists (for example, Kressel, 1990) to suggest that student samples are a barrier to progress in academic psychology.

A further concern about samples is the issue of ethnicity, for example the declining presence of African Americans in psychological reports in the journals of the American Psychological Association (Graham, 1992).

It is self evident that there are problems with research based on a narrow sample, but it is necessary to consider a few of these problems in this article. One of these problems is the behaviour of students who are taking part in studies for university staff. Korn clarified the reality of a research situation from the viewpoint of a student participant and suggested that students can adopt a number of roles, each of which will affect the outcome of the study (Korn, 1988a). They can adopt the role of the 'good subject' who tries to please the experimenter, or the role of the 'faithful subject' who carefully follows instructions even if they involve blatant deception, or the role of the 'apprehensive

subject' who shows performance anxiety, or even the role of the 'bad subject' who has a negative attitude.

A further problem of the student sample is the range of differences that have been shown to exist between them and other people. The majority of British students are 18 - 25, leave home to start their university course, and in so doing leave behind friends, family and familiar ways of behaving and being. This social dislocation brings with it a number of personal and social demands for the individual student. Among the particular features of students identified by research (Newstead, 1979; Sears, 1986) are the following,

- (a) their self-concept is unlikely to be fully formed
- (b) social and political attitudes are less crystallised than in later life
- (c) they are more egocentric than older adults
- (d) they have a stronger need for peer approval
- (e) they have unstable peer relationships.

These apparently negative characteristics can be seen as adaptive when considered in the context of social dislocation. What is undeniable, however, is that the demands of being a student have an effect on a range of behaviours and social judgements. It is also worth considering how informed our student samples are about psychological research procedures, and how they interpret and respond to the research situation.

If we add to the above the selection of students by their cognitive performance (A Level results), and the high proportion of students who come from the professional and managerial (UCAS, 1999), then we can argue that students are a narrow selection of the general population whose behaviour is structured by the demands of being a student.

Incomplete reporting of methods

Close analysis of the methods sections of research reports uncovers some serious omissions including consent and debriefing procedures, socio-economic status of the participants, race of experimenter, participant demographics and the incentives used to recruit participants (Graham, 1992; Korn, 1988b). The issue is not unique to psychology, and a review of educational research (Whittington, 1998) found the reporting of measurement in educational research journals provided the reader with too little information to judge the accuracy of the measurement technique. It was observed that around half the articles which were examined failed to report the reliability of the

measures and nearly two thirds failed to consider the characteristics of the sample.

Reporting the situation

One of the robust findings from social psychology is that behaviour is affected by the situation in which it is performed (for example, LaPiere, 1934; Milgram, 1963; Piliavin, Rodin, & Piliavin, 1969). It is, therefore, important that a scientific report should record the situation that the study took place in. In the same way, if we report on the boiling point of water we have to say whether we conducted the study at sea level, at the top of a mountain or on the moon. Likewise the effects of alcohol will be different if consumed in a psychology laboratory, a public house or the vicar's drawing room. In our research we have to acknowledge that the psychology experiment is a social situation (Orne, 1962) and our samples try and make the best sense they can of it. If the sample is made up of students, they will bring to that situation their expectations and common sense understandings that are framed by their experience of the university, and their relationship with research staff. The demand characteristics of the psychology experiment create their own changes in behaviour, and, as Orne points out, the experimental situation is a confounding variable.

The above points emphasise the importance of detailed reporting in our published research. One of the basic requirements of a scientific report is that it allows the reader to assess the value of the evidence and to judge how much the conclusions can be generalised. The research might be conducted on students in laboratories, but as long as we are aware of the details of the method, then we are able to replicate the study in other circumstances and so confirm or challenge the results. It is unlikely that psychologists will find much cause for disagreement with this. The question, then, is what is the current practice of mainstream British psychological journals in their selection of papers for publication? Where are the studies conducted, on whom are they conducted and are all the relevant details reported in the methods sections?

Method

This research looked at all articles published in The British Journal of Social Psychology (BJSP), and The British Journal of Psychology (BJP) in 1995 and 1996. The analysis was conducted on the 107 articles that contained primary data (56 out of 64 from the BJSP, and 51 out of 67 from the BJP)

The articles were coded for,

- 1 Who was in the sample
- 2 Where the study was carried out
- 3 How the sample was selected
- 4 How the data were collected
- 5 Other sample characteristics

Results

Inter-coder agreement

A second coder analysed one volume of the journals under consideration. The overall agreement was 91%, and values for Cohen's Kappa on the various coded items ranged from 1.00 to 0.75.

Who was in the sample?

Out of the 107 codeable studies, 31 (29.0%) used a sample of non-student adults, although 6 (5.6%) of these studies also used students as part of the sample (see Table 1). In a few of these cases the adults were faculty staff within the university. Of the 18,635 people who made up the samples for the two journals, 44% were undergraduates, 23% were other students, and only 29% were non-student adults.

Table 1. Research samples in the BJP and BJSP in 1995 and 1996

Where was the study conducted?

The analysis shows that only 15.9% of the studies were conducted in a real life environment and this figure includes questionnaire studies that were completed in the homes or workplaces of the participants. The majority of studies were conducted in controlled environments such as a laboratory (28.0%), elsewhere on the university grounds, most commonly a lecture hall (26.2%), or some other controlled environment, most commonly a school classroom (18.9%)

Table 2. Location of research in the BJP and BJSP in 1995 and 1996

How was the sample recruited?

It is difficult to be precise with this analysis because of the loose use of terms such as volunteer. Some form of pressure was put on the sample in 58.0% of the studies, most commonly requiring compliance

for course credit (15.0%), being part of a captive audience, most commonly in a scheduled lecture (15.9%), being personally approached and requested to take part (13.1%), or being offered payment (14%). Only 17.8% of studies claimed to use volunteers. A further 19.6% of studies did not give enough information to code on this question. A summary is given in Table 3.

Table 3. Methods of recruiting the research sample

What type of research was published?

The research published in the BJSP used largely self-report methods (over 70% of all papers) which were mainly questionnaires (over 50% of all papers) and responses to vignettes. The BJP, on the other hand, published research which used a wider range of methods and the most common research method was a laboratory task (over 50% of all studies). A summary is given in Table 4.

Table 4. Type of research in BJSP and BJP in 1995 and 1996

What is missing in the Method sections of the BJSP and the BJP?

Many studies contained method sections that were, arguably, incomplete.

(a) Out of the 107 codeable studies, 12 (11.2%) did not give enough information to identify where the study was conducted. Many of the other studies gave only minimal information though it was often apparent that the study was conducted in a classroom or somewhere else on the university site even when this was not clearly stated in the method.

(b) 35.8% of the codeable studies did not record how the sample was recruited.

(c) Of the 18,635 people who made up the samples, there was not enough information to code 33.3% of them for gender.

(d) The ethnicity of the sample was considered in only one of the 107 studies. It can be argued for many studies that it is not necessary to consider this subject variable, but for others it is an important area of difference.

(e) The sexual orientation of the sample was considered in none of the studies. Again it can be argued that it may not be one of the most salient variables in many studies, but some investigations analysed in this research (for example, Alvaro & Crano, 1996; Smith, Tindale, & Dugoni, 1996) required the participants to consider vignettes about homosexual behaviour and complete attitude questionnaires. In these cases it would seem appropriate to consider sexual orientation when analysing the responses to the questionnaires.

(f) The class or social economic status of the sample was considered in 9 (8.4%) of the 107 codeable studies.

Discussion

The results confirmed previous research findings (Cochrane & Duffy, 1974; Sears, 1986) that published psychological research is mainly based on student samples, selected through coercive means and studied in restricted environments. The results also confirm the previous findings on the incompleteness of methods sections (Graham, 1992; Korn, 1988b; Whittington, 1998).

It is not suggested here that we should abandon the use of student samples. There is clearly a place for research that uses informed samples in restricted environments. Among the issues that can be more easily addressed in this way are those of the ethical nature of the research. Some research does not lend itself to replication in real life environments because of the discomfort to people that is unlikely to be remedied by debriefing and support. Furthermore, there is considerable knowledge about the development of various social processes and cognitive abilities over the life span. This allows us to make some reasonable inferences from student data to the general population. The issue is not the use of students but the failure to question their representativeness of any given population (other than, of course, the populations of students). If researchers make this argument then the problem of the narrowness of the sample can be considered, and any likely effects can be addressed.

There are a number of further challenges raised by this analysis and by the previous literature. One of the challenges concerns the completeness, or otherwise, of method sections in the BJP and BJSP. Recent research has identified that authors are not considering the power of statistical tests in their reports and, in so doing, are running the risk of coming to inappropriate conclusions about their findings¹ (Clarke-Carter, 1997). This report suggests that a further source of

error comes from a failure to report, and therefore consider, all appropriate aspects of the conduct of the research, the selection of the sample and the composition of the sample. The way that people are recruited for a study may well affect their response to the research task, so it is necessary to accurately record the recruitment process and consider its effects on the research data.

A second challenge concerns the location of the research. Collecting data from students in a university environment is a simple option. There are usually a lot of them about and they are often very willing (or appear to be so) to take part in psychological studies, even when the procedures are time consuming and boring. The issue to address concerns the ecological validity of these studies. To gain a full picture of human behaviour and experience we need to examine that behaviour and experience in a range of environments.

A third challenge is to consider issues of equal opportunity in our research. The variables of ethnicity and sexual orientation were not recorded at all in the audited studies, and the issue of socio-economic status was recorded in just a few. It is an irony that one edition of the BJSP considered in this research was a special issue on minority influence.

To deal with all members of the sample as equal units has the benefit of simplifying the analysis by reducing participant variables to just those that the researcher wishes to consider. It may well be appropriate not to consider issues of gender, ethnicity, class, disability or sexual orientation in all research even though these are some of the important differences in experience and outlook that participants bring to their conduct in psychological studies. It is more difficult, however, to argue that these variables should form no part of the attempt to develop our scientific understanding of behaviour and experience. By systematically ignoring these variables our research becomes, among other things, colour-blind and class-blind.

The BPS Statement and Policy on Equal Opportunities (British Psychological Society, 1994) identifies gender, colour, ethnic origin, nationality, religion, disability, sexual preference and age as issues of concern for professional practice. Interestingly it does not specifically mention research activity as part of professional practice. It has been vigorously argued that psychological research and practice can be sexist (see for example Bohan, 1992), racist (see for example Richards, 1998), and ageist (see for example Schaie, 1988). The case has been made against American psychology that it will become

obsolete unless it makes revisions to take greater account of ethnicity, gender and sexual orientation (Iijima Hall, 1997). The same argument can be made for British psychology.

Conclusion

The conclusions from this and other studies present an uncomfortable picture of published psychological research in this country. The samples are largely unrepresentative of the general population, and the research is mainly conducted in restricted environments using people who are finessed into taking part. There is also little consideration of individual and group differences associated with class, age, ethnicity or sexual orientation. Perhaps most surprisingly is the failure to provide a complete replicable method section in many of the published reports. The studies by Sears (1987), Newstead (1979), and others, suggested that there was cause for concern about the body of research published in American and British journals during the 1970's and 1980's. The current analysis echoes that concern for current research published in British journals.

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Table 1. Research samples in the BJP and BJSP in 1995 and 1996

British Journal of Social Psychology and British Journal of Psychology				
Sample	No. of cases	% of cases	No. of participants	% of participants
Psychology undergraduates	30	28.0	3972	21.3
Other undergraduates	41	38.3	4301	23.1
Other students	24	22.4	4256	22.8
Non-student adults	31	29.0	5414	29.0
Not reported	3	2.8	710	3.8
TOTAL	107*	100.0*	18653	100.0

* Some cases had samples based on more than one category

Table 2. Location of research in the BJP and BJSP in 1995 and 1996

British Journal of Social Psychology and British Journal of Psychology		
Location	No. of cases	% of cases
University	28	26.2
Laboratory	30	28.0
Other controlled environment	20	18.7
Real life	17	15.9
Not recorded	12	11.2
Total	107	100.0

Table 3. Methods of recruiting the research sample

British Journal of Social Psychology and British Journal of Psychology		
Method of recruiting sample	No. of cases	% of cases
Compliance for course credit	16	15.0
Captive audience	17	15.9
Personal approach	14	13.1
Payment	15	14.0
Volunteer	19	17.8
Other	5	4.7
Unreported	21	19.6
Total	107	100.0

Table 4. Type of research study in the BJSP and BJP in 1995 and 1996

British Journal of Social Psychology and British Journal of Psychology		
Type of research	No. of cases	% of cases
Self report	61	46.6
Laboratory task	38	29.0
Group task	7	5.3
Theoretical	20	15.3
Not coded	5	3.8
TOTAL	131	100.0