

Reporting research

Something missing?

ARE we telling the full story in our research reports? Do the journals of The British Psychological Society give full accounts of procedure in their method sections? And is our research still largely based on student samples? This article looks at these questions and raises issues of concern for psychologists.

Previous work has identified a range of 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. However, here we consider only the selection of samples and the complete, or otherwise, reporting of methods.

Sample selection

Over the past 40 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 *et al.*, 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.

Sears' review found 82 per cent of the research studies used student samples, and 51 per cent of all samples were drawn from psychology students. Furthermore, 78 per cent of the studies were conducted in laboratories; and just 22 per cent 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 1960s. The analysis found that three quarters of the non-clinical studies used samples of students, and fewer than 15 per cent of the studies reported on any attempt to test the representativeness of the sample. So, not only did the research rely largely on student samples, it relied on non-representative student samples.

Only one in 20 of the studies discussed



PHILIP BANYARD and NIGEL HUNT analyse what is missing from the method sections of British psychology journals.

deficiencies of sampling and their possible implications for the results of the research. Cochrane and Duffy's paper also identified other deficiencies in the reporting of research and the analysis of results.

Further work confirmed difficulties 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' (p.385).

Other problems with sample selection

As well as the general problem of employing student samples, there are further issues 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 *et al.*, 1991);
- students who volunteer for after-class data collection have different cognitive styles to students who volunteer for in-class data collection (Spirrison *et al.*, 1996);
- knowledge of the researcher creates a coercion bias in student samples (Francis & Stanley, 1991).

These analyses have led some psychologists (e.g. 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 we need to consider a few of them here. One of these problems is the behaviour of students who are taking part in studies for university staff. Korn (1988a) 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.

Students can adopt the role of the 'good' participant who tries to please the experimenter. Or the role of the 'faithful' participant who carefully follows instructions even if they involve blatant deception. Or the role of the 'apprehensive' participant who shows performance anxiety. Or even the role of the 'bad' participant who has a negative attitude.

A further problem in using student samples 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:

- their self-concept is unlikely to be fully formed;

- social and political attitudes are less crystallised than in later life;
- they are more egocentric than adults at older ages;
- they have a stronger need for peer approval;
- 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 affect 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 professional and managerial backgrounds (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 method sections of research reports uncovers some serious omissions (Graham, 1992; Korn, 1988b). These include: consent and debriefing procedures; socio-economic status of the participants; race of experimenter;

TABLE 1 Research samples in the BJP and BJSP in 1995 and 1996

Sample	cases	% of all cases	participants	% of all 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

participant demographics and the incentives used to recruit participants.

Such omissions are not unique to psychology. A review of educational research found the reporting of measurement in educational research journals provided the reader with too little information to judge the accuracy of the measurement technique (Whittington, 1998). Whittington observed that around half the articles reviewed 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 (e.g. LaPiere, 1934; Milgram, 1963; Piliavin *et al.*, 1969). It is, therefore, important that a scientific report should record the situation in which the study took place.

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.

We have to acknowledge that the psychology experiment is a social situation (Orne, 1962), and that our samples try to make the best sense they can of it. Samples of students will bring to that situation their expectations and common sense understandings, 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 pointed 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 psychology 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 method sections?

The study

Our 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. We



TABLE 2 Methods of recruiting the research sample in the BJP and BJSP in 1995 and 1996

Method of recruiting sample	cases	% of all 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

analysed 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

Two coders analysed one volume of the journals under consideration. The overall agreement was 91 per cent.

The findings

Who was in the sample? Out of the 107 codeable studies, only 31 (29.0 per cent) used a sample of non-student adults, although 6 (5.6 per cent) 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.

Where was the study conducted?

Our analysis shows that only 15.9 per cent of the studies were conducted in a real-life environment, and this figure includes questionnaire studies completed in the participants' homes or workplaces.

The majority of studies were done in controlled environments: a laboratory (28.0 per cent); elsewhere on the university grounds, most commonly a lecture hall (26.2 per cent); or some other controlled environment, most frequently a school classroom (18.7 per cent).

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 per cent of the studies, most commonly: requiring compliance for course credit; being part of a captive audience, usually in a scheduled lecture;

being personally approached and requested to take part; or being offered payment. Only 17.8 per cent of studies claimed to use volunteers. A further 19.6 per cent of studies did not give enough information to code on this question. (See Table 2.)

What type of research was published?

The research published in the BJSP used largely self-report methods (over 70 per cent of all papers), which were mainly questionnaires (over 50 per cent of all papers) and responses to vignettes. The BJP, on the other hand, published research using a wider range of methods; the most common research method was a laboratory task (over 50 per cent of all studies). A summary is given in Table 3.

What is missing? Many studies

contained method sections that were, arguably, incomplete.

- Out of the 107 codeable studies, 12 (11.2 per cent) did not give enough information to identify where the study was conducted. Many of the other studies gave only minimal information. However, 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.
- Over a third (35.8 per cent) of the codeable studies did not record how the sample was recruited.
- Of the 18,635 people who made up the samples, there was not enough information to code 33.3 per cent of them for gender.
- The ethnicity of the sample was considered in only one of the 107 studies. It can be argued that, for many studies, it is not necessary to consider this variable. But for others it is an important area of difference.
- 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 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.

- The class or socio-economic status of the sample was considered in only 9 (8.4 per cent) of the 107 codeable studies.

The implications

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

We are not suggesting that we should abandon the use of student samples. There is clearly a place for research that uses informed samples in restricted environments. Student samples can have some advantages — for example, in controlling the ethical issues raised by research. Some research does not lend itself to replication in real-life environments because it could cause discomfort to people that is unlikely to be remedied by debriefing and support.

There is also considerable knowledge about the development of various social processes and cognitive abilities over the lifespan. 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 (including the population of students). If researchers did ask this question, then the problem of the narrowness of the sample could be considered, and any likely effects addressed.

There are a number of further challenges raised by this analysis and by the previous literature. One challenge 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 findings (Clark-Carter, 1997)¹. Our study suggests that a further source of error comes from a failure to report — and

TABLE 3 Type of research study in the BJP and BJSP in 1995 and 1996

Type of research	cases	% of all 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

therefore consider — all appropriate aspects of the conduct of the research, and of the selection and composition of the sample.

The way that people are recruited for a study may well affect their response to the research task, too, 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 university-located 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 studies we examined, 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: it reduces 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 Society's statement and policy on equal opportunities (The 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 (e.g. Bohan, 1992), racist (e.g. Richards, 1998), and ageist (e.g. Schaie, 1988). A case has been made that American psychology will become obsolete unless it takes 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 surprising 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 1970s and 1980s. Our analysis echoes that concern for current research published in British journals.

Note

¹ It is interesting to note that the statistical issues raised recently in the BJP about effect size (Clark-Carter, 1997) were identified in the *Bulletin of The British Psychological Society* as long as 25 years ago (Cochrane & Duffy, 1974).

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