Social psychology:

new directions in computer-based learning

Lesley J. Allinson

School of Social Sciences and Professional Studies, University of Humberside

The provision of CBL within social psychology has been, to date, largely restricted to providing introductory teaching material and event-logging tools. Experiment generators, as exist in the more formal domains of cognitive psychology, are required to actively engage students in acquiring practical professional skills. Here we introduce the concept of Multimedia Experiment Packages (MEPs), which lie somewhere between conventional CBL and free-form experiment generator packages. Two case studies are described which offer integrated MEP environments to promote sound research skills.

Introduction

Perhaps surprisingly, psychology has been a discipline eager to capitalize on the application of computers for teaching. Traditionally, this has been for statistical calculations, and the presentation of experimental stimuli and the automatic collection of timed events (e.g., reaction times, choice-decision times). Here, the traditional capabilities of computers are being exploited – namely, their accurate temporal sequencing, graphical performance, and, above all, their *number crunching*. As such, they have been powerful and essential tools for those involved in the more psychophysical or cognitive areas of psychology. Computer-based learning (CBL) remains very much a preserve of these more formal domains. The arrival of hypermedia has opened the way for CBL to be exploited within the less formal domains of psychology; but the level of interactivity is usually very restricted, and the constrained presentational styles means that even this technological progression fails to meet the contextual richness needed in the teaching of much of the behavioural sciences. The advent of multimedia has for the first time provided the potential to explore, within the normal undergraduate learning environment, *real* behaviour using the observational techniques that form the basic methodology of the practising social psychologist.

This paper outlines the needs for Multimedia Experiment Packages (MEPs) in social psychology tuition in terms of both their pedagogical and technological requirements. These

are illustrated by two case studies of prototype MEPs – one for initial student exposure to observational methods, and the other for the detailed exploration of a complex category system for the microanalysis of conversational dialogue. The current development stage of these packages is more akin to traditional open-ended laboratory practicals in their functionality. However, the aim is to extend the current authoring aspects (now chiefly seen by the tutor) so that the students can incorporate their own material (e.g., edited video and transcripts), develop their own behavioural classification schemes, and effectively integrate the teaching of research methods with original research of their own.

Multimedia Experiment Packages for social psychology

Psychology and the behavioural sciences are – by their very nature – empirical. An essential facet of any undergraduate course is the exposure of the students to the design, implementation, and analysis of experiments. Such activities have been traditionally very resource-intensive in terms of staff time and expertise, and equipment needs. Computer-based experiment generators are readily available in the formal domains of psychology. Here, the experiment is *active* in the sense that the experimenter designs and executes all aspects of the experiment. In social psychology, the typical approach is to observe human behaviour in a naturalistic setting. The experiment, or more correctly the non-participant observational study, can be said to be *passive*, as the experimenter merely observes what is occurring in some aspect of the everyday world. The scientific observation of complex social behaviour demands adeptness in detailed classification techniques whereby the precise nature of the individual differences in behaviour can be identified and recorded. These passive studies require a very active engagement in the data-collection process. The intricate and perceptual nature of the behavioural classification schemes demands that they are best taught by a guided exposure to numerous examples. It is necessary to learn by example rather than through a more rigorous approach.

It is difficult to organize, for the teaching of these practical skills, a naturalistic exposure to the appropriate social behaviour. The behaviour of interest may occur only in specific *non-public* circumstances or in remote locations. So the apparatus that we have been forced to employ, in the main, is the video-recorder with all the associated ordeals of slow access and poor user-control. Even accepting the limitations of carefully edited videos, the acquisition of skills in observing, recording and analysing social situations, interactions and conversations is tutor-intensive if these skills are to be mastered at more than a superficial level. Individual, or even small-group, tuition of observational skills is often no longer economically feasible within the rapidly changing realm of higher education. The seamless inclusion of video and sound in an integrated learning environment has made the computer-mediated approach not only viable but also capable of creating an enhanced educational experience tailored to the individual. The potential of CBL to promote deep active learning has been extensively reported and discussed elsewhere (Laurillard, 1993), as have the requirement to recognize the differing learning styles and needs of the individual student (Allinson, 1992).

Case studies

The following two case studies illustrate different aspects of prototype MEPs. The first is aimed at a wide audience of students, and not only demonstrates the logistical benefits of

computer delivery over traditional means but indicates how experience of experimental methodology, data collection and analysis, and assignment generation may be combined within a single package. The second is a more advanced, and specialized, topic where the underlying educational objective is to provide tools for the deep appreciation of a complex classification system. In this short paper, the emphasis will be functionality of the packages rather than detailed evaluation findings (which will form the basis of a later paper).

Case study – Introduction to Observational Methods

This MEP was designed to introduce a large number of first-year undergraduates, taking a range of social science courses, to the elements of observational methodology. The concept of observing social behaviour is not new to students; it is an everyday activity for all of us. Mostly, these observations are unfocused and unintentional. Observations that are conducted as part of social science research need to be deliberate, systematic, accurate and record interesting aspects of behaviour. It is these differences that need to be emphasized to students, and solid foundations laid for further courses – both in appreciating the work of others, and in designing and conducting their own research. The example behaviour chosen for this first exposure to observational methodology is based on the collision avoidance behaviour of pedestrians. When individuals approach one another on a *collision pathway*, a collision will occur unless one or both of the pedestrians take some form of avoidance action. Collett and Marsh (1981) found that while men oriented themselves towards the person they were passing, women tended to turn away. Turning in towards a person has been termed an *open pass*, while turning away has been termed a *closed pass*. The example is chosen as it a relatively simple explicit instance of non-verbal behaviour, and can form the basis of further discussion (either in tutorial classes or through assignments), and the students can be encouraged to observe this activity in their everyday environment. This final point is important as it reinforces the relevance of social science studies in attempting to explain previously unnoticed activities.

The existing mechanisms for conducting this exercise were the provision of paper documentation and an edited videotape giving examples of open and closed passes, followed by examples which need to be classified. This edited tape was, in fact, produced from over three and half hours of recorded video. The practical difficulties were the logistical ones of booking out one of a small number of tapes, finding a videoplayer, and then struggling with its poor operational interface. A computer-based solution overcomes all these constraints on the student's learning opportunities. The standard integrated Quicktime video controller offers far greater control than that of a videoplayer. The students are more acquainted with manipulating a computer interface through extensive exposure to other CBL packages than operating a unfamiliar videoplayer. Computer use is familiar to students as IT skills are compulsory elements for all first-year students at the University of Humberside. The original paper documentation could not take into account differences between videoplayers; but the MEP presents a uniform interface together with the relevant online assistance.

The learning package has been deliberately kept simple in its presentational form (see Figure 1). However, the package provides much more than the previous delivery method – not only is background information, data-entry and statistical testing integrated, but the relatively small number of events analysed by the student can be merged with a larger data set, and the results (both raw data and results of the statistical tests) can be transferred directly to their assignment reports. The original videotape exercise has been presented as both a group activity and as an individual self-learning activity. When conducted as a group exercise, there was poor

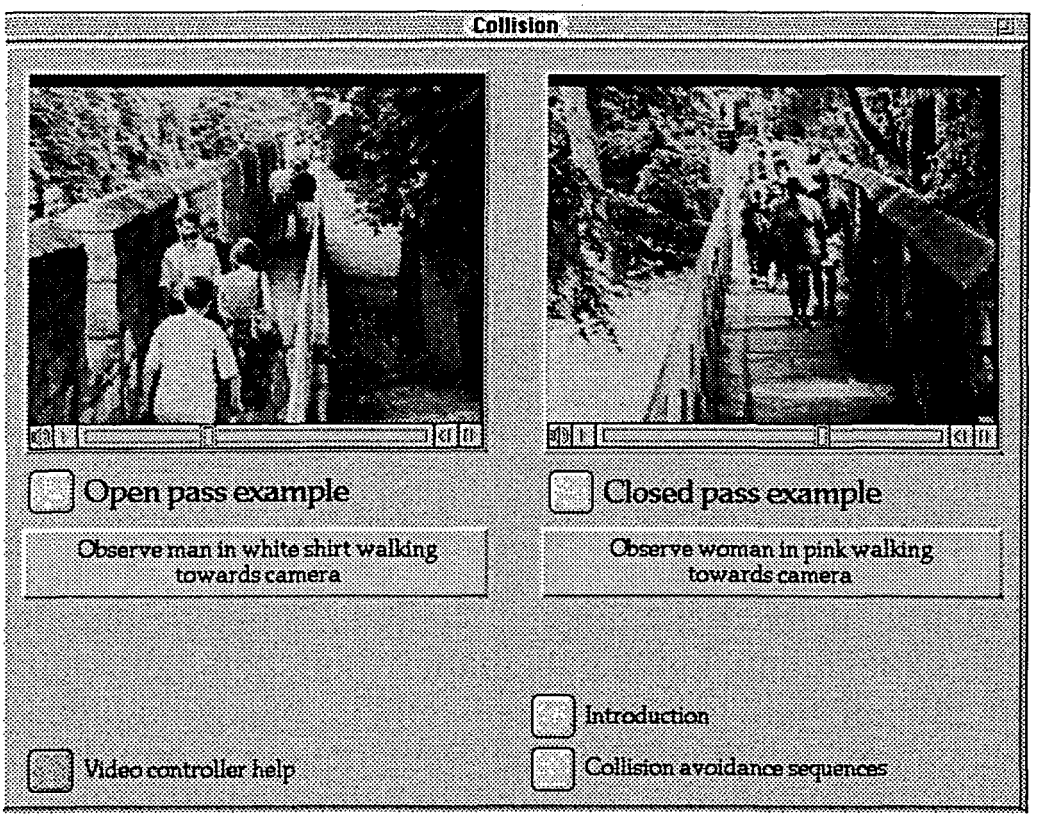

Figure 1: Training examples of open and closed passes from Collision Avoidance: an Introduction to Observational Methods

agreement between the students in classifying the events even with carefully edited and well-spaced videoclips. This suggests that improved user control is required to ensure the required level of concentration on the task. The ease of access, selection and manipulation of the video provided by the computer interface, have overcome this problem. The computer-based approach, though intended as an individual self-learning activity, does allow students to work in *ad hoc* groups if they wish. As these introductory practicals are integrated into the IT skill acquisition programme, for all social science students, this enriched utilization of computers is most appropriate at this time.

Case study – Microanalysis of Political Interviews

The analysis of social interaction has played a significant role in social psychological research; and various techniques have been developed in order to further our understanding of this aspect of social behaviour. The example used in this MEP concerns the detailed structure of how politicians and interviewers relate within the bounds of televised interviews (Allinson and Bull, 1995). The topic has an inherent general attraction to students; and notwithstanding its importance as an example of social-psychology research, it provides an excellent basis for presenting the complex classification schemes that can result from detailed conversation analysis. The analysis of equivocation in political interviews by Bull and Mayer (1993), which

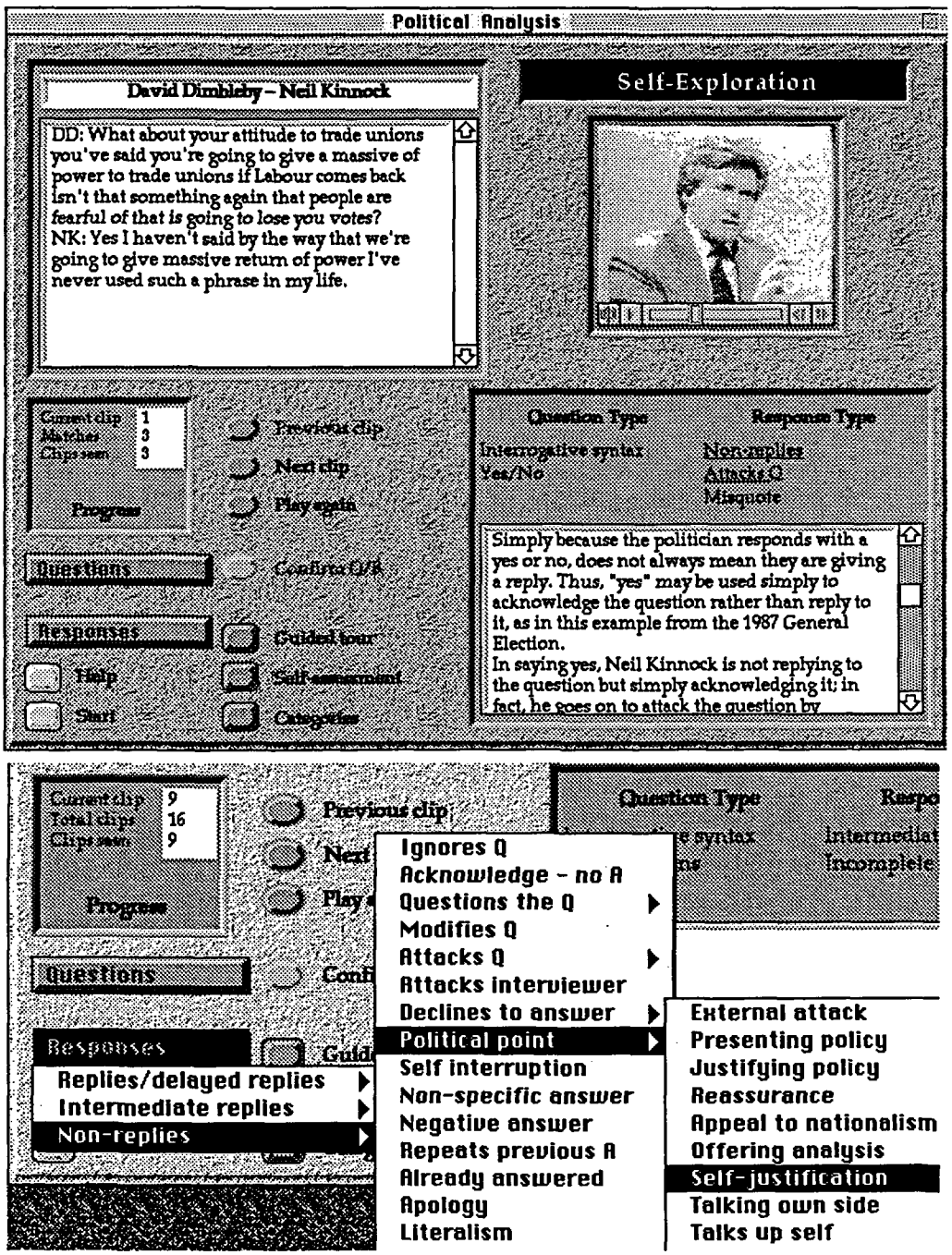

Figure 2: Self-exploration access mode from Political Interview Analysis. The user can select a complete or partial question/response pair from the hierarchical menus (shown in the lower figure) and then play the recovered video clips. Note the provision of video (with sound), transcript and associated notes

forms the background of this package, specifies a set of criteria for identifying questions, replies and non-replies to questions in political interviews, and a scheme whereby different types of non-replies could be categorized – to date, 35 different types of non-replies have been identified! This on-going work forms part of a second-year social psychology module at the University of York.

Existing practical classes were very expensive in terms of expert time. With the expert tutor able to demonstrate only a few categories of question/response pairs and provide edited video examples, the practical class was forced to resort to the analysis of audio cassettes (aided by transcripts and guidance notes). It was impossible to provide a classroom of videoplayers. With the provision of computer delivery, the students are now able to engage in more in-depth analysis, one outcome being a much enhanced standard of assessment. Previously, it had not proved possible to assess this activity in a meaningful manner.

The structure of this hierarchical classification system differs from the intrinsic knowledge base of more conventional hypermedia systems in that the knowledge base is not a generalized network of information screens but a well-ordered hierarchy. There is still a need to allow the user to transverse the structure of the classification system in a variety of ways; namely:

- Guided tour – Author-prescribed route aimed at presenting an ordered view of the classification scheme
- Self-exploration – User selects partial/complete question/response types to retrieve a specified subset of examples (see Figure 2)
- Self-assessment – User presented with example(s) and required to guess the correct question/response type(s)
- Categories – User selects question/response type or a subset via a diagrammatic representation of the classification scheme.

These differing navigational/learning modes not only endorse such cognitive principles as Tulving's *encoding specificity* – i.e., material is easier to recall if it contains distinctive retrieval cues that can be regenerated at the time of recall – and *encoding variability* – i.e., multiple exposure to the same material in differing contexts will aid recall – (Tulving and Thomson, 1973), but there are other educational strengths. For example, access via the categories mode enables the hierarchical nature of the classification scheme to be directly discernible through its spatial arrangement. The interface is necessarily more complex than in the first case study, but across all the modes it presents as far as possible a uniform functionality and appearance. The interface can be briefly described in terms of the *self-exploration* mode. The user selects a complete or partial question/response pair from the hierarchical menus. The selection appears in the *Question and Response frame*, and the number of available examples is also indicated. The details of the first example (i.e., participants, transcript, notes and first frame of video) are displayed. The video can be played (any number of types). The user can move through the various examples using the *Previous clip* and *Next clip* buttons. Details are displayed of the user's current position within the example sequence.

All data files (e.g., video clips, transcripts, associated notes and classification codings) are maintained separately to the MEP application. This allows the easy replacement or addition of

material. A number of support tools are available assist in the authoring processes. At present, these are used only by the tutor, but it is intended that more comprehensive tools will be made available to the students so that they can construct their own classification systems for related discourse activities.

This particular application lends itself well to multimedia presentation. Firstly, the microanalysis of discourse is necessarily an intense activity. The analysis of the discourse from written transcripts alone is tedious, and it is therefore difficult to motivate students. The inclusion of the video jointly with the textual transcript helps to add interest and increase motivation as well as emphasizing the detailed context of the message. The non-verbal aspects of voice intonation, phrasing, gesture and facial expression are of immense additional value. The complete package provides direct access to full annotated background papers and introductory material. There are over 60 videoclips, which together with associated transcripts and notes, comprise over 130 Megabytes of data. The investment, in terms of the development effort, has relieved the tutor from much of the menial work associated with this teaching module, and has provided tools for easily modifying the content as well as improving the educational experience and assessment.

Future directions

These two case studies illustrate the capacity of current CBL tools for the implementation of social psychology MEPs. The first study presents a simple system for widespread use among novice social-science students. The aim is to offer a seamless extension from the limited supplied examples of collision events to where students can incorporate their own video recordings. There should be a natural progression from introductory/training material, through open-ended practicals, to open research activity. The second study though exemplifying the strengths of multimedia to provide CBL packages for the study of complex human interactions, has revealed that there is much within the authoring aspects that is still very time-consuming – the transcripts have to be produced manually. The current standing of automatic speech-to-text transcription is still far removed from coping with the subtleties of finely structured conversations. The same can be said about the automatic recognition of bodily and facial gestures. Advances in these areas will come, and will have their initial impact on research but they will feed through into teaching. The boundaries between these currently distinct activities will become less perceptible as computational power and availability increases. The concept of the MEP introduced in this paper goes some way in providing the generic experiment generator *shell* for social psychology.

Increasing productivity and rising student numbers are often quoted as major factors influencing the introduction of CBL; but the application of comprehensive multimedia implementations for the teaching of practical social psychology skills can be viewed as an augmentation of traditional methods and not merely an imposed substitute. There should be a merging of teaching and research tools, so enabling active learning and furthering the eventual goal of the virtual *real-world* social psychology laboratory.

References

Allinson, L.J. (1992), 'Learning styles and computer-based learning environments', in Tomek, I. (ed) *Computer Assisted Learning*, Berlin, Springer-Verlag, 61–73.

Allinson, L.J. and Bull, P. (1995), 'Teaching the practical skills of the social psychologist: the analysis of political interviews', *Psychology Teaching Review*, 4, 90–102.

Bull, P.E. and Mayer, K. (1993), 'How not to answer questions in political interviews', *Political Psychology*, 14, 651–66.

Collett, P.R. and Marsh, P.E. (1981), 'Patterns of public behaviour: collision avoidance on a pedestrian crossing' in Kendon, A. (ed), *Non-verbal Communication. Interaction and Gesture*, The Hague, Mouton Press, 199–217.

Laurillard, D. (1993), *Rethinking University Teaching*, London, Routledge.

Tulving, E. and Thomson, D.M. (1973), 'Encoding specificity and retrieval processes in episodic memory', *Psychological Review*, 80, 353–73.