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PSYCHOLOGICAL ISSUES IN QUESTIONNAIRE-BASED RESEARCH

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Abstract

The questionnaire survey is a primary tool in market research. However, there are many psychologically-related issues and limitations which may not always be considered.

This paper brings these issues together under the four headings of Theory building, Validity of self-report, Measurement and Analysis, i.e., spanning the formulation of the research, the collection and analysis of data through to the interpretation of the results.

The main conclusions are that in planning questionnaire research the explanatory and psychological limitations must be recognised, indirect and behavioural measures should also be considered, the aims must be related to the measures and results, and that psychological advice may be useful during the planning of the research.

KEYWORDS: Questionnaire surveys, Psychology, Self-Report, Cognitive psychology.

TEXT LENGTH: 4500 words

Introduction

The questionnaire survey is a primary tool in market research. Questionnaire surveys are useful. However, even if they are well-specified and structured, there are limitations due to psychological factors in using such self-reports to provide actionable research findings. If these are not understood, questionnaires may be used inappropriately and/or results misinterpreted.

The modern use of the questionnaire in market research is derived from the social sciences, and the theoretical basis and justification come from psychology. Market researchers, although they have applied psychological training, are typically not psychologists specialised in social and cognitive psychology, attitude or measurement theory. Therefore, there is a possibility of questionnaires being used inappropriately, even though they may be formally well-designed.

The purpose of this paper is to alert such non-psychologist market researchers to the psychologically-related limitations of questionnaire-based market research. This will be done by using examples of the psychological issues involved drawn from both relevant seminal and more recent cognitive psychological research. The discussion primarily covers "paper and pencil" questionnaires completed by a respondent. However, some of the limitations considered, e.g., impression management, are also relevant to interviewer completed questionnaires and qualitative research methods.

For convenience, the limitations are discussed under four sections relevant to the application of questionnaires, i.e., spanning the formulation of the research, the collection and analysis of data, through to the interpretation of the results:

1 Theory building 2 The validity of self-report

3 Measurement

4 Analysis

1 Theory Building

This first section examines the limits to the sort of theory that can be constructed from questionnaire data. People have always asked other people questions and assessed what they have said. Questionnaire surveys are a more effective way of doing this, in that more people can be asked and in that the answers can be subjected to statistical analysis. However, surveys are not a universal method to answer questions in research. For example, an applied research programme may be characterised by the questions:

1 Is there a phenomenon (social or otherwise)? This is an empirical question.

2 What causes it? This requires an understanding of the causal processes or mechanisms involved, i.e., having a theoretical understanding.

3 Can we change it? This is the application aspect and is usually used to improve or optimise the phenomenon if positive, or reduce or remove it if negative.

These questions have to be answered in order, since there is no way in which something can be optimised without understanding what is causing the effect. How these questions are answered depends on the situation. Questionnaire surveys provide a characterisation, or diagnosis, of a situation or problem and they may also be very useful in suggesting why something is happening. In contrast, in many cases experimental methods may be needed to identify definitely first, what causes something and, secondly, how to change it. These involve the use of planned interventions and controls (these are often closely identified with the "scientific method").

As an example of identifying a cause, suppose that a survey of peoples' buying of a product revealed that ten per cent of a large sample returned the item as unsuitable, whilst zero of those who read the product "small-print" did, this would be strongly indicative. In this case the survey would have suggested a causal mechanism or "hypothesis" and a related strategy of social intervention (i.e., to get other people to read the small print). However, the small-print readers might be doing something else or have personal characteristics that reduce the incidence of returns. To check that it really is the reading of the small-print that is reducing returns, the next step might be to set up a trial where two groups are randomly taken from the general population (i.e., they are effectively the "same" people), one of which is asked to read the small-print" group then is shown to have a reduced incidence of returns, then we can be pretty sure that it really is the reading of the small-print that has had the effect. The causes of individual preferences can also be identified through careful design of interventions and measurement, in effect, combining a qualitative approach with the experimental method (Freeman et al. 1993).

Following on from the identification of cause, questionnaire surveys cannot, by themselves, suggest how to change something, e.g., how a problem may be solved or "cured". They can indicate "what" needs to be done but not "how" to do it. The processes of diagnosis and cure require very different theoretical approaches and understanding. For example, in preparation for an anti-smoking campaign a survey might identify or "diagnose" that people of a particular age and life style smoke more than others. Further surveys might find out more detail about their lifestyles, and be based on the insights of sociological and cultural/anthropological theory and research. However, this or any further survey work will not allow the formulation of a useful (i.e., causal) theory that will give guidance as to how to design a planned intervention to reduce or "cure" such addictive behaviour. Simple exhortations by conventional advertising are unlikely to be effective since they do not address the affective and habitual behaviours involved (Zajonc & Markus 1982). Instead, such planned interventions are likely to involve the findings and theoretical approaches which have come from experimentally-based research related to changing addictive and habitual behaviours, feelings and thinking, e.g., using influence and persuasion techniques from experimental social psychology (Cialdini 1993) and behaviour modification (Kazdin 1989).

More generally, although they may be suggestive, questionnaire surveys look at the current state of a population, rather than the processes or experiences that control how any individual got to that state. No

amount of surveying, describing and grouping people (or firms) by questionnaires at a certain time can give definitive rules about how a particular person (or firm) will behave in the future, or why; or how to change that behaviour. The difference is that of knowing the "statics", i.e., characterising the situation, verses the dynamics, i.e., knowing how it got to that state. Similarly, taking several questionnaire surveys at different times cannot, by themselves, identify definitely what is causing change. Although one can suggest that several factors may affect another, it is always possible that something unknown is simply affecting all of them.

However, questionnaires can be useful in describing names and concepts; identifying possible explanations relating concepts to one another and in showing correlations between concepts. Self-report approaches are also very useful in getting "deep" descriptions and for tailoring interventions to a specific situation. For example, suppose a retailer wanted to change their customer's purchase behaviour by compliance procedures. These are known by many years of psychological experimentation to be generally applicable and effective ways of changing behaviours (Cialdini 1993, Varela 1971). However, the retailer would have to be sensitive to the local situation in which the compliance procedures are applied, e.g., knowing how people think about the procedures and the behaviour to be changed. Here self-report methods would be very useful to tailor the application of an experimentally tested and generalisable intervention to the particular situation.

In summary, surveys are very useful in describing and diagnosing situations and can suggest causes. But they are not capable of delivering predictive theories, i.e., theories that tell you what to do. Therefore, depending on the purpose of the research, they may need to be backed up by intervention-based research for confirmation.

2 The validity of self-report in predicting behaviour

Questionnaire research is commonly used to identify what people do and what influences their behaviour. This is a key commercial justification for their use. The strength of the link between questionnaire responses and behaviour, and the influences on behaviour, is therefore a critical issue. This section examines the social and psychological factors that may affect the accuracy and effectiveness of questionnaire surveys in predicting behaviour.

However, before this specific issue is addressed, some comment will be made on the validity of self-reports per se. It could be argued that questionnaire attitude measures are perfectly valid measures of respondents' attitudes and questionnaire behaviour measures are valid measures of respondents' behaviour. The problem then is that respondents' (genuine) attitudes do not predict their (genuine) behaviour. The validity problem might then be seen as lying with the researchers' insistence on using an invalid theory, not with the respondents' inability to supply valid answers to questions. However, the debate might be more be more usefully focused upon in which part of the theory any invalidity may lie, e.g., is it in the response production or elsewhere?

This argument relies on the presumption that something like a "genuine" attitude is, in practice, available. In research not just confined to questionnaire studies, self-report data is recognised as being influenced by many biases and sources of invalidity and unreliability. If these remain unaccounted for, results based on self-report data also have unknown validity and reliability. There are two overall ways in which the biases and sources of invalidity and unreliability may arise: expectations the respondents may have, and the inherent difficulties associated with self-report, which are, to varying degrees, indirect methods based on introspection.

In the first case, the sources of bias, invalidity, and unreliability can be linked to what have been known as "demand characteristics" (e.g., Barber 1976), and the expectations that participants may have about the research, which can arise from interpretations based on particular ways of phrasing questions, or specifying the kind of responses that participants can make (e.g., Rosnow and Rosenthal 1997, Schwarz 1995.) In the second case, the lessons learned from Pfungst's (1911/1965) study of Clever Hans, and from research, documented in Rosnow and Rosenthal (1977) which stems from this needs to be learned. One of the conclusions drawn from this corpus of research on the validity of self-report per se is that fact that people

can often be unable to comment either validly or reliably, on their behaviour. In these circumstances, various post-hoc rationalisations may be generated from being asked about reasons and attitudes (which then becomes partly an issue of demand characteristic).

In practice, the linkage between self-report response and behaviour very much depends on issues such as what is being asked, the situation, why people think the questions are being asked (i.e., their views about the nature of the research and the use which will be made of it) and how anonymous their comments will remain. For example, people are likely to be quite reliable when predicting some things, e.g., if they will be going on holiday in August. However, when more personal aspects, such as their opinions, values and attitudes are being investigated, there is need for more caution in interpretation.

Indeed, it is a longstanding and well-documented finding that expressed attitude or change in attitude bears little or no relation to behaviour (e.g., Wicker 1969, Lloyd et al. 1984); the reasons for this discrepancy and how to resolve it are a continuing topic of debate and research amongst attitude theorists (Street 1994, Kraus 1995, Debono & Snyder 1995, Lloyd 1994). One could say that attitude theorists themselves measure attitude to find out why it does not predict behaviour; whereas others use attitude measures presuming that it does. Four areas where this attitude-behaviour discrepancy may arise will now be discussed:

Social: One socially-based explanation for the lack of relation between expressed attitude and actual behaviour is that the expression of an attitude is a "speech act" produced more in reaction to the immediate social situation, e.g., the perceived motives of the researcher or interviewer, rather than being related to past behaviour or predictive of future behaviour (Lalljee et al. 1984, Abraham & Hampson 1996). In essence, this explanation suggests there is no possibility of a "neutral" context where a person's "true" attitude can be elicited. These "impression management" effects will be more pervasive the more socially or politically important the questions are to the respondent. So even if "true" attitudes did reflect behaviour, they may not be expressed in the questionnaire responses.

This may be especially so in an organisational environment (Bozeman & Kacmar 1997). For example, in surveying attitudes of NHS managers to their organisation, two responses other than a simply "truthful" answer may be expected. The first relates to the validity of the answers. The motives of those (few) who answer the questionnaire must be questioned. Their loyalty is to their organisation and not the researcher. Therefore, their answers to the questions may well reflect the public relations "story" that the organisation wishes to present (e.g., "We have excellent staff communication"). This may be the case even if anonymity means that they could, in principle, give realistic answers. The second response is a "non-response" bias where most managers will simply not answer the questionnaire because they get no benefit from answering it. Any information leaving the organisation may confer competitive advantage to others. More generally, those who choose to respond to questionnaires are a self-selected group, and may also differ in ways relevant to the research question from those who choose not to answer. Thus, given such validity and response bias factors, although it is possible that answers may reflect "reality", it is arguable whether a questionnaire survey of organisational members will give easily interpretable results.

Situational: Attitude may also not predict behaviour because they are not directly related. For example, it is often overlooked that measures of behavioural intention or attitude, e.g., such as whether one will buy something, can predict behaviour accurately only if the expression of intention immediately precedes the behaviour to which it refers. The questions must also be directly related to the behaviour. These are not usually the case in most questionnaire studies. Ajzen and Fishbein's (1977) attitude model, which is used as the justification for much questionnaire research, does not claim that attitude is related to behaviour (only "behavioural intention"). Ajzen and Fishbein point out that many situational factors must also be considered in the determination of behaviour, and that these are usually unavailable in practice.

Habitual: There is much evidence that most ordinary human behaviour is routine and habitual (Langer 1978, Slugoski 1995), even that which appears quite cognitively complex (Langer et al. 1978). Habits can be not only patterns of behaviour, but also include patterns of fantasy, emotion and thought (c.f., Script theory, discussed below). Much of working behaviour, often the subject of questionnaire research, is also routine and habitual, and perhaps not very involving.

In contrast, questionnaires are novel to the respondents and thus require thought, and they also assume high involvement and cognition. It is arguable to what extent the type of thinking required to complete

questionnaires is relevant to the routine social or work situations that they often inquire about. People do not ordinarily think about their attitude to a (social) object whilst they are behaving towards it.

Cognitive: Many years of experimental psychological research have also shown that people sometimes may simply not know why they do things, although they can effortlessly give apparently "true" reasons. For example, people can often be (a) unaware of the stimulus that influenced their responses, (b) unaware of their responses to a stimulus, and (c) unaware that the stimulus affected their response. These studies have led cognitive psychologists to question the value of self-reports about peoples' perceptions. Nisbett and Wilson's (1977) classic and influential review of this research showed that though people may not really know the reasons for their behaviour, they are well able to provide a plausible post-rationalisation, which even though they believed it, was not actually related to the real reason. They commented that the evidence was consistent with "the most pessimistic view" concerning peoples' ability to report accurately about their cognitive processes, and that consequently it may be quite misleading for social scientists to ask about the influences on peoples' evaluations, choices or behaviour. They concluded that the evidence suggested that such reports, as well as predictions, "may have little value except for whatever utility they may have in the study of verbal explanations per se".

This gulf between what people do and what people say they do is a major problem of modern cognitive psychology. Because of this difficulty, one of the preoccupations of cognitive psychology has been to develop alternative theories and techniques to attitude that try to overcome the problem of the unreliability of self reports about mental events. For example, Abelson (1976) pointed out that the concept of "attitude" is a somewhat abstract notion and may not relate to the "concrete" way in which people actually understand and act in the world. He suggested the "script" (Abelson 1981) as an alternative concept to "attitude" in understanding peoples' mental representations. Script theory has led to indirect methods of understanding representations such as lexical decision making (e.g., Faust & Babkoff 1997) and recall times (Custers et al. 1996). A script can be thought of as a pre-formed package of commonly understood prototypical information about the routine social actions typically encountered in the workplace and elsewhere (e.g., the "restaurant script"). It can be likened to a series of pictures with associated captions or scripts. These are also the situations frequently asked about in questionnaires. The more frequently or routinely the activity takes place, the more people rely on such "scripts".

Since the 1930's it has been generally accepted that attitudes operate within a conscious awareness. However, the issues raised by cognitive psychologists such as Nisbett and Wilson have led to a reformulation of the very concept of attitude. Attitude is now considered as being of two types, the explicit, which is conscious and revealed by direct self-report; and the implicit, which is unconscious and cannot be reported by the subject, but still influences behaviour and is revealed by indirect measures (for review, see Greenwald & Banajii 1995).

Research in attitudes and racial prejudice illustrates how cognitive research methods have been used to explore the difference between explicit and implicit attitudes and their relation to behaviour. In a series of studies, Dovidio et al. (1997) found that if white subjects were first subliminally exposed (or "primed") to a black face on a screen, they had a faster recognition for negative words than if white faces were shown; with the opposite occurring for positive words. This implicit measure of attitude (i.e., response latency) did not correlate with the explicit attitude, as measured by the standard questionnaire instruments for racial prejudice (including those designed to prevent "impression management").

Which is then the "true attitude"? The self-report measures were found to correlate with the rating of the guilt of a black person in a mock trial. However, when subjects were interviewed by black people, reduced eye contact and increased blink rate correlated with the response latency measure, but not with the self-report measures. These results are consistent with the finding that a black person's perception of a white person's friendliness was better predicted by their implicit attitudes than explicit attitudes (Fazio et al. 1995). Such non-verbal behaviours are considered to be outside conscious control and relate to reduced attraction and tension, respectively. In contrast, the guilt judging task requires a more deliberative and public response and is thus more likely to be influenced by social desirability effects.

In summary, the above factors indicate that the validity of the responses to a questionnaire will depend very much on what is being asked, the situation that is being asked about, and the type of behaviour that is being

investigated. These results from cognitive and social psychology suggest that the appropriateness of the questionnaire method to a particular research problem must be very carefully considered.

3 Measurement

Measurement is a complex and contentious issue, and it is perhaps at its most contentious when addressing the measurement of self-report. The following sections give examples of the issues involved.

Investigator bias

A common justification for using questionnaire surveys is to collect data, and through textual analysis, to derive a theory post-hoc (Glaser & Strauss 1967). There is need for caution here, since the act of collecting data requires a decision as to which data are appropriate, and this requires at least some idea about why these data are appropriate. This means that there must already be an "implicit theory" in the researcher's mind before data collection commences.

Furthermore, it is impossible for a researcher to examine a situation with an unbiased mind, because one's cultural, social and educational or training background must inevitably colour the nature of the implicit theory and thus how a situation will be approached (e.g., what is looked at) and how the results will be analysed and interpreted.

In short, an investigator's biases and expectations can never be completely ruled out since no one comes to a situation with a "blank slate". This applies to some extent to all research, including the "hard" experimental sciences. However, in comparison, the social situations being investigated in questionnaire research are complex and unique, thus there will always be a debate as to the most appropriate approach. There is no easy answer and the best that can be done is to be aware of the problem and make one's implicit assumptions explicit by careful and critical analysis and discussion, where all criticism must be examined. This may lead to uncomfortable conclusions.

Selection of Measures

The results of a survey will very much depend on what has been asked in the first place. In a questionnaire, it is always a matter of opinion about the number of questions to ask (i.e., why 15, and not 30 questions?), and why these particular questions. For example, the number of factors needed to describe the human personality depend on how it is measured. Cattell's (1981) personality theory has sixteen factors, whereas Eysenck's theory has three (1975). The humans are not different; the difference is due to the type and numbers of questions originally asked (with the inevitable implicit assumptions underlying them) and the particular statistical analysis employed (see Section 4). In summary, the results of questionnaire surveys and their interpretation may be open to debate, i.e., inconclusive in some sense.

Errors in measurement

There are many technical problems associated with the measurement of self-report. Here are some examples covering issues of question design and contextual influences. It is notoriously difficult to make any clear quantitative statement about changes on a subjective scaling (Torgerson, 1958). For example, unless a psychological scale has an absolute zero (i.e., is a "ratio scale") it is impossible to make statements such as "Product X is rated as 20% more attractive than Product Y". It is unlikely that a standard questionnaire scale about preferences and opinions, etc., can be assumed to have ratio properties, therefore such useful statements cannot usually be made. There are also problems in scale linearity, e.g., is the psychological distance between 1 and 2 the same as between 9 and 10?, and with end effects, e.g., if the maximum score is 10 and it is given to a product early in a sequence a respondent cannot give a score of 15 if a more extreme product is then encountered.

The questions asked may not be sensitive to differences, e.g., "improved or not improved" may not pick up subtle differences, say, in a behaviour which has graduations. Questions often involve comparisons; the

direction of a comparison, e.g., "Is A more important than B" and vice-versa, can give different results (Wanke et al. 1995). Similarly, people may make reversal errors if left-right scales are used to rate A and B, perhaps especially if the preferred term is placed on the right (Kirk-Smith 1995).

"Context" effects also influence responses to questionnaires, both in the method of administration (Grossarthmaticek et al. 1993) and in the order of questions (Sheeran and Orbell 1996). Schwarz et al. (1991) presented a questionnaire asking a) how happy people were in their marriage and b) how happy they were with life as a whole. If the marriage question was asked first, then the correlation between the two questions was a significant 0.67; if the general question was asked first then the correlation was an insignificant 0.32. Thus researchers asking the same questions, but in a different order, would come to completely different conclusions. This effect is thought to be caused by increased cognitive accessibility (or "priming"). When people have to think about their marriage, relevant thoughts come easily to mind and will then influence the answer to the general question. When the general question is asked first people cannot retrieve all potentially relevant information, and so there is less influence on the subsequent marriage question. Such context effects are hard to predict, although the underlying "social cognition" processes are becoming understood (Schwarz & Strack 1991).

Beliefs, attitudes or intentions may also be created by the questionnaires themselves, if such "constructs" do not already exist in long-term memory. For example, people answering a questionnaire about their social class and redress for medical negligence may not have considered the issues before, but the reading and answering of the questions may now create new constructs in their minds. Similarly, constructs already existing in memory may be altered in content or importance by encounters with the questionnaire.

Questionnaires may often be given before and after an intervention (Cook & Campbell 1979). However, repeated experience of questionnaires influences the way that they are answered, even with a control group. For example, the various questions asked may change in relevance from pre- to post-intervention (a separate issue from the change in rating given to a particular question). Such "experience treatment" interactions are uninterpretable, i.e., if a change is found between before and after, one cannot be sure that this change was due to the intervention rather than a change on relevance of the questions.

These problems primarily arise from the fact that humans are not machines from which answers can be "read-out", and because everyone's experience is different. As a result, peoples' ways of thinking are unpredictably changed by the methods used to measure their way of thinking, and this puts a limit on certainty in interpreting questionnaire results.

4 Analysis & Interpretation

If a questionnaire survey involves many questions, rather than few, it is likely that its aims are to find out more about situations or problems, i.e., to characterise or describe them better, rather than to test specific hypotheses (in which case fewer measures would usually be involved). The aims of a many-question survey will necessarily be diffuse, and the purpose of the data analysis is to look for patterns in the data, and then to speculate as to their cause.

Questionnaires may be summarised by simple cross-tabulation, however, the complex relationships between the many questions are more appropriately analysed by multivariate statistical methods. The increased availability of computing power and easy to use statistical software means that data can be readily subjected to many forms of multivariate analysis.

This ease in analysing huge amounts of data has led to considerable benefits, e.g., the ability to identify important differences, trends and correlations across many and large populations is now a practical possibility. However, without a clear theoretical guidance to provide clear aims much of this calculating power may be unproductive due to what has been picturesquely described as "dustbowl empiricism" or "the notorious barrenness of multivariate data-grubbing" (by D.A.Booth, personal communication). These statements mean that, because questionnaire data can now be collected and analysed so easily there is a risk that the aims may not be clearly identified, and the problems of measurement and analysis may not be addressed fully. For example, interval data may be analysed by statistical methods appropriate for ratio data,

or non-parametric data might be subjected to parametric analyses, or unreliable generalisations made (e.g., when many questions from too few subjects are factor analysed).

When data are multivariate there will be many ways of comparing and patterning these data. This depends on which method is used (e.g., cluster analysis verses factor analysis) and to the options which are taken in using a particular method (e.g., the decision as to the degree of correlation between factors in factor analysis). These can completely alter the pattern of results that comes from analysis of the same data, e.g., a different selection of options might change the number of consumer groups with similar attitudes from four to fourteen, even though the same data are input.

In summary, questionnaires allow the easy collection of data. With this comes the possibility of many ways of analysing these data, and the consequent possibility of many ways of patterning and grouping these data. Unfortunately, unless technical advice is available, this also multiplies the possible ways of making errors.

Conclusion

The purpose of this article is to suggest that questionnaire methods are useful. However, the provisos and limitations due to the various psychological factors described above mean that they must be used with caution. With this in mind, several questions may be posed to avoid the major errors:

1 Are we expecting the results of the survey to tell us what to do, rather than identify where and what the problem is? An accurate diagnosis can be made, and may suggest what should be done, but will it give guidance on how to do it?

2 Do we have clear aims? These will determine the questions and the usefulness of the results. If a question cannot be directly linked to answering an aim or describing the sample, its purpose should be queried. A good practice is to link the questions to the results by drawing up mock results sections and then checking that the results are capable of answering the aims. This exercise will help identify major errors.

3 Are there other methods that might be used in conjunction with questionnaires as a check? The relation of implicit attitudes and behaviour suggests that indirect methods should also be considered in certain circumstances.

4 Finally, the examples given in this paper suggest that knowledge of the psychological issues is important for the correct use of questionnaire survey methods. Market researchers may therefore find it useful to seek advice in designing their surveys from psychologists with expertise in self-report, attitude and social cognitive areas.

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