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Exploring attitudes: the case for Q methodology

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Abstract

Attitudes are often referred to, researched and considered in the discipline of health education and health promotion. This paper highlights Q methodology as an appropriate and relevant means of exploring and studying attitudes within this field. It begins by discussing the difficulties in defining attitude and the problems inherent in attitude measurement. A brief history of Q methodology is given, followed by an explanation of what Q methodology is and the processes involved. This paper argues the case for the use of Q methodology when studying attitudes and justifies why Q methodology should particularly be selected in the study of attitudes within the health field. There are many reasons for this assertion which are explored throughout the paper. The principle one is that Q methodology is a more robust technique, than alternative methods, for the measurement of attitudes and subjective opinion. This paper concludes by proposing that Q methodology is taken up by researchers within health education and health promotion who are concerned with exploring attitudes and subjective opinion.

The context

The following paper sets out an argument for the use of Q methodology in the study of attitude measurement within the field of health education and health promotion. Attitudes and subjective opinion are often sought within this field, from lay persons and health professionals to policy makers. The paper begins with discussing the inherent difficulties in defining and exploring attitudes, gives a brief history and explanation of Q methodology, and the processes involved, and justifies, in several ways, why Q methodology should be used rather than alternative approaches. The principle reason being, as will be demonstrated, that Q methodology is a more robust technique for measuring subjective opinion. The conclusion is drawn that Q methodology is taken up by researchers in the field who are concerned with exploring attitudes and subjective opinion.

Attitudes are central, relevant constructs in health education and health promotion, and the health field generally. The study of attitudes and subjective opinion is important for several reasons. Attitudes have an impact on health experience. They may affect health either positively or negatively. In order to affect attitude change towards a given health issue existing attitudes need to be determined. The attitudes of lay persons, health workers and professionals, policy makers, and even health researchers themselves in any given direction may be of interest and worth exploring.

Defining attitudes

'Attitudes' are difficult to define. The term has lay and specialist connotations, and even within the specialist psychological realm there is little consensus as to what is understood by it (Fielding,

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1986). Current thinking is that attitudes help form cognitive relationships, which in turn may predispose behaviours. Positive attitudes towards a topic are felt to orient the person in a positive manner toward that idea (Jonassen, 2001). Several authors offer different definitions [see (Fishbein and Ajzen, 1975; Bennett and Murphy, 1997; Eagley and Chaiken, 1998)]. Common to most is that an attitude is a predisposition to behave in a particular way (Proctor, 2001), and early attitudinal research assumed a strong relationship between attitudes and behaviour (Bennett and Murphy, 1997). If this is the case then it is necessary to explore attitudes in health. Attitudes may influence behaviour and, in turn, be influenced by it (Arul, 1977). Behaviour is an important issue in health since it directly affects health outcomes. It is supposed that attitudes are concealed and not directly observable in themselves, but they cause actions and behaviours that are observable, e.g. health-related behaviours. Although 'attitude has been a difficult concept to define adequately' [(Jonassen, 2001), section 34.2.1], research on attitudes has been, and remains, popular in many disciplines, not least in the health field.

Attitudes also imply evaluation and are concerned with how people *feel* about an issue (Simmons, 2001). Common to most definitions is that attitudes consist of two or more components. Oppenhiem [(Oppenhiem, 1992), p. 382] elaborates on this:

> attitudes are reinforced by beliefs (the cognitive component) and often attract strong feelings (the emotional component) which may lead to particular behavioural intents (the action tendency component).

People hold attitudes to, and about, things or 'objects'. In health this encompasses a wide range of issues. Indeed, an attitude 'object' may be anything a person discriminates or holds in mind—it may be concrete or abstract (Bohner, 2001). It is also believed that attitudes change as people learn to associate the attitude object with pleasant or unpleasant contexts or consequences (Bohner, 2001) (processes described in Social Learning Theory) and that they relate to how people perceive the situations which they find themselves in (Jonassen, 2001).

Measuring attitudes

The measurement of attitudes has a long history in social psychology, dating back to 1928 when Thurston published a paper titled 'Attitudes can be measured'. Subsequently a number of methods for measuring attitudes have been devised. Two of these methods, most commonly used at the present time, are the Likert Scale and Semantic Differential.

The Likert Scale, developed by Rensis Likert, is a technique for measuring attitudes. The key feature of this method is that respondents are asked to rate the extent of their agreement or disagreement with a set of statements about the attitude object. A set of statements or items are usually collected about a chosen area, then a set of respondents are asked to express the extent of their agreement or disagreement with each of the items. Responses are measured in terms of strength of agreement or disagreement and a respondent's agreement ratings are summed to obtain a score representing his or her attitude (Manstead and Semin, 2001). Manstead and Semin (Manstead and Semin, 2001) argue that a strength of the Likert Scale is its ability to capture different aspects of attitude, ranging from beliefs to behaviour. It is also possible to assess strength of agreement or disagreement with relatively complex belief statements. However, there is discourse in the literature regarding the strengths and weaknesses of the Likert Scale [see (Mclver and Carmines, 1981; Manstead and Semin, 2001)].

The Semantic Differential, developed by Osgood *et al.* (Osgood *et al*., 1957) asks respondents to rate the attitude object on a set of bipolar adjective scales (Manstead and Semin, 2001). This is done by placing a tick or a cross in one of the seven spaces on each of the rating scales. The ratings are scored and the scale scores are summed or averaged to obtain an overall index of attitude. In contrast to the Likert Scale, the Semantic Differential focuses on simple evaluative beliefs and is suited to measuring

affective and behavioural aspects of attitude. A strength of the Semantic Differential is the ease and speed with which it can be used (Manstead and Semin, 2001).

Self-report measures, such as these, have several advantages, among the most important being their ability to assess psychological constructs such as attitudes in a relatively economical way (Manstead and Semin, 2001). They also have disadvantages. It is not always possible to collect self-report data completely unobtrusively: participants are always aware that they are under investigation and may modify their responses as a result. In particular, there is ample opportunity for the respondent's answers to be influenced by motivational factors such as social desirability.

The measurement of attitudes deserves great care and close attention to detail. The general point is to recognize the necessity to improve reliability and validity (Proctor, 2001). Proctor (Proctor, 2001) also writes of the long-standing debate—the 'attitude–behaviour problem'—which refers to the common (indeed, almost universal) finding that there is no simple relationship between verbal and non-verbal indicators of an attitude. There is substantive evidence that attitudes are only, at best, moderately related to behaviour (Bennett and Murphy, 1997). In health education and health promotion the relationship is assumed to exist to a certain degree—hence the focus on issues such as attitude *change* [see (Tones and Green, 2004)]. Observing behaviour as an indicator of attitude alone, however, is profitless. The attitude itself should also be explored. Interestingly, research into attitude strength has shown that many attitudes are much weaker than the traditional view of attitudes might suggest (Bohner, 2001). This was most pointedly demonstrated by Wilson and Schooler (Wilson and Schooler, 1991) who found that simply asking people to think about the reasons why they hold a certain attitude often leads to dramatic change. In addition, Clark (Clark, 1997) proposes that a new experience may cause an individual to modify or reject existing attitudes. Thus various researchers have proposed that attitudes are best conceived of as context dependent, temporary constructions (Bohner, 2001). Nevertheless, interest in them remains—not least in the field of health.

Q methodology

Q methodology is a means of extracting subjective opinion. It was invented in 1935 by British physicist/psychologist William Stephenson (Brown, 1996). It evolved from factor analytic theory (Brown, 1997). It has since been applied outside the field of academic psychology, most notably in the fields of communication and political science, and more recently in the behavioural and health sciences (Brown, 1997). Stephenson was interested in providing a way to reveal the subjectivity involved in any situation—it is life as lived from the standpoint of the person living it that is typically passed over by quantitative procedures and it is subjectivity in this sense that Q methodology is designed to examine (Brown, 1996). Although there is plenty of evidence of controversy and peer criticism regarding Q methodology and Stephenson's work in the literature, particularly up until the late 1960s [see (Brown, 1997) for further discussion], it is now being widely adopted as a means of investigation, predominantly in North America.

Stainton Rogers (Stainton Rogers, 1995) summarizes R methodology as the paradigm of traditional empirical psychology. The case for 'Q' as opposed to 'R' is argued by Brown who gives the following example to aid understanding of Q's differing perspective [(Brown, 1997), p. 2]:

> In the case of R methodology something is done to the person, as when we take blood pressure or measure height: this is the objective mode and the person's stance relative to measurement is passive. In the case of Q the person actively does something, i.e. measures or scales a population of measurable material: this is the subjective mode insofar as measurement is from the person's standpoint.

In Q methodology the 'sample' is composed of the items in the Q sort and the people who complete the Q sort are equivalent to, in R methodology, the

experimental condition (Kitzinger, 1987). Q methodology begins with the notion of finite diversity (Stainton Rogers, 1995), the aim being not to obtain the truth, but to collect and explore the variety of accounts people construct (Kitzinger, 1987). Therefore, it is possible to centre on the subjective experience and understanding of the people taking part. It is not, however, the 'constructor' (the participants) who are the focus of the approach, but the 'constructions' themselves (Stainton Rogers, 1995).

How 'Q' is carried out

The instrumental basis of Q methodology is the Q sort technique which conventionally involves the rank-ordering of a set of statements from agree to disagree (Brown, 1996). It requires the participant to evaluate (or sort) a number of items along a continuum from, for example, 'very like me' to 'very unlike me' (Kitzinger, 1987). The respondent arranges the statements into a forced normal distribution of most to least agreement, yielding a model of subjective preferences within the given 'universe of discourse' (Peritore, 1989). 'The data from Q methodology are literally what participants make of a pool of items germane to the topic of concern, when asked to rank them' [(Stainton Rogers, 1995), p. 180].

The Q sort is usually a self-directed process. To carry out a study there needs to be something for the participants to rank. This usually consists of between 10 and 100 items (the 'Q set'). The activity of sorting them is known as 'Q sorting'. Items are ordinarily provided on cards or on paper which the participants are asked to cut up themselves. The Q set consists of a sample of items to be ranked by the research participants along a continuum, the poles of which are defined by the researcher in accordance with the demands of the research topic (Kitzinger, 1987). In order to arrive at the Q set 'sampling' has to take place.

Sampling (generating items) may be 'research question' driven or part of the formulation of the research question. The sources of sampling will vary study by study, but the following are commonly used: individual and/or group interviews, literature review (professional and/or popular), transmitted media output or the cultural experience of the researchers (Stainton Rogers, 1995). The initial number of items (e.g. these may be statements) is usually 2–3 times as many as the final number. These are reduced in number by pilot testing, the aim being to achieve optimum balance, clarity, appropriateness, simplicity and applicability. Although appropriateness and applicability are fairly self-evident, and work as they do in questionnaire design. Stainton Rogers *et al.* (Stainton Rogers *et al.*, 1995) suggest that people find it easiest (it makes more sense) to carry out a Q sort which has only one kind of statement in it (i.e. representations or understandings). In practice, items are usually single words or sentences, but photographs and other images can be used. The Q set is randomly numbered, put onto cards, shuffled and offered to participants who are asked to use them to model their view or account by sorting them into categories, e.g. from most like my attitude (+5) to least like my attitude (−5) with a central neutral category (0) (Kitzinger, 1987) (see Figure 1).

Typically, one or two descriptors are placed in the extremes and the majority are placed toward the centre, resulting in a normal distribution (Prasad, 2001). The distribution is usually 'forced' and is recorded by the participant on a response grid.

Analysis of the responses then takes place. Q methodology employs a particular form of multivariate analysis, in order to identify and describe the

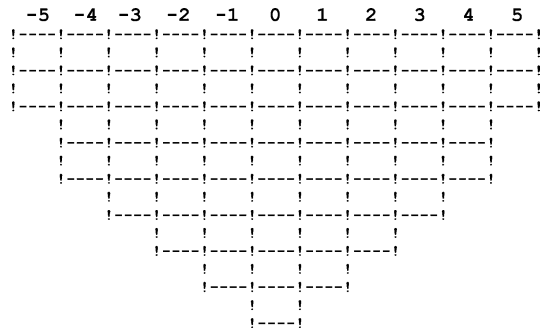

Fig. 1. Diagram of an example Q sort.

different 'stories' that can be told about a particular topic or issue—it usually does this by examining the way people respond in systematically different ways to propositional samples of discourse (Stainton Rogers *et al*., 1995).

The final stage of a Q study is to interpret the resulting factors. Interpretation is achieved in terms of comparisons and contrasts between the positioning of items in the reconstructed Q sorts representing each factor—interpretation may be aided by theory, previous research and/or cultural knowledge (Stainton Rogers, 1995). The factor matrix (or loadings) summarizes which of the Q sorts are similar or different from one another—the main features of the participants' subjectivity are then rendered manifest (Brown, 1996). The different sorting patterns are examined in order to infer what particular 'story' is being told by each one [(Stainton Rogers *et al*., 1995), p. 249].

The case for Q methodology in the study of attitudes and subjective opinion

Despite its mathematical substructure, Q methodology's purpose is to reveal subjective structures, attitudes and perspectives from the standpoint of the person or persons being observed (Brown, 1996). Brown (Brown, 1995) argues that there is no other method or theory which matches Q methodology's versatility or reach, and which comports so well with the principles and concepts of contemporary science. Prasad (Prasad, 2001) purports that Q methodology can be used in a variety of settings, on the same individual, multiple times and with short inter-test intervals. Further advantages of the Q sort methodology are identified by Peritore (Peritore, 1989): it respects the integrity of the respondent, results can be recorded anonymously and factorial results cannot be predicted. It is argued that Q methodology combines the strengths of both qualitative and quantitative research (Dennis and Goldberg, 1996) and provides a bridge between the two paradigms of inquiry (Sell and Brown, 1984). Understanding, or exploring, subjectivity is its main reason for existence and the perpetuation of the experimental process.

> Subjectivity is everywhere, from the loftiest philosophizing and diplomatic negotiating to the street talk of the juvenile gang and the self-talk of the daydreamer, and it is the purpose of Q methodology to enable the person to represent his or her vantage point for purposes of holding it constant for inspection and comparison. [(Brown, 1997), p. 2]

Q methodology has been used in several studies to date exploring attitudes and understandings [see, e.g. (Peritore, 1989; Barry and Proops, 1998; Meloche, 1999)]. Zraick and Boone (Zraick and Boone, 1991) emphasize that Q methodology is more focused than a general attitude questionnaire, and that Q sorts are normally distributed and therefore can also be used parametrically in inter-group comparisons.

No completely effective tool has yet been devised to measure attitudes accurately. Q methodology is one of the more popular means of looking at attitudes (Peritore, 1989; Zraick and Boone, 1991). The range of subjects which can be studied using this technique is almost unlimited, but typical examples would be attitudes, 'representations' of social objects and understandings (Stainton Rogers, 1995). It therefore can be seen that it has direct application in health research, and that the potential for its use in the field of health education and health promotion is far reaching.

Another factor underlying the Q approach to participants is that, in a perversion of the survey paradigm, Q methodology has no interest in estimating population statistics; rather, the aim is to sample the range and diversity of views expressed, not to make claims about the percentage of people expressing them (Kitzinger, 1987). Q methodology 'fits' those research questions which are concerned to hear 'many voices'—what makes it unique is how those voices are allowed expression (Stainton Rogers, 1995). Some examples of its use are as follows. Nitcavic and Dowling (Nitcavic and Dowling, 1990) explored American *perceptions* of terrorism and concluded that Q methodology offers a means of

identifying groups or 'types' of persons who share similar attitudes toward a phenomenon. Caneday *et al*. (Caneday *et al*., 1996) used Q methodology as a means of gaining understanding of the *subjective experience* rather than an objective analysis of visitors' behaviour in a leisure facility. Prasad (Prasad, 2001) looked at physician *attitudes* about HIV/AIDS and concluded that the Q-sort instrument is a reliable method for measuring and exploring attitudes [see also (Gaebler-Uhing, 2003; Coffey *et al*., 2004)].

The operation of Q sorting is inescapably subjective in the sense that the participant is sorting the cards from his or her own point of view—the subject therefore applies their own 'meanings' and understanding to the items (Brown, 1997). Prasad (Prasad, 2001) argues that use of the forced choice method (forced matrix) means that the respondents have to consider their attitudes more carefully, which can bring out true feelings in response Whereas it is true that statements for a Q set are typically selected in terms of a factorial or other representation of a theory, the supposed *a priori* meaning of the statement does not necessarily enter into the Q sorter's considerations when evaluating them: participants inject statements with their own understandings (Brown, 1997).

Stainton Rogers (Stainton Rogers, 1995) argues that Q methodology is a quintessentially alternative methodology for those dealing with discourse and text and that it suits the research needs of social disciplines more generally. More specifically, Dennis (Dennis, 1986) argues that Q methodology is relevant to many substantive areas of scientific inquiry, and may be applied to the study of attitudes related to aspects of health and health beliefs. There is growing literature in the health field using this means of study [e.g. (Dennis, 1986; Stainton Rogers, 1991; Dennis and Goldberg, 1996, Prasad, 2001; Coffey *et al*., 2004)].

Q methodology is criticized for a number of reasons. When repeated on the same persons Q methodology does not necessarily yield the same results which has led to questions regarding reliability. However, social psychology sees no problem with this as there is no expectation that an individual will express the same views on two separate occasions (Stainton Rogers, 1991). It should be noted that there is some disagreement in the literature here since Brown (Brown, 1980) maintains that Q sort can be replicated with 85% consistency up to a year later. Constraint is put on the participant in terms of the items provided. Limitations are automatically placed on the participant's responses due to the pre-determined statements and therefore it is argued that there are only limited accounts which can be expressed. In order to more accurately represent the views of the subjects and not rely solely on the decision making of the researcher in choosing the final selection of statements, interviews or focus group discussions about the subject matter could be conducted and the statements derived from these for use in the Q sort.

There is risk of bias at the interpretation stage as this task lies with the researcher. To take the analysis beyond the most basic descriptive and counting exercise requires the researcher's analytical skills in moving towards hypotheses or propositions about the data (Pope *et al*., 2000). Like other 'scales' Q methodology relies for its effectiveness on the cooperation and frankness of the respondent. This may have its disadvantages. For one reason or another the respondent may try to fake responses or 'give a great many uncertain responses' [(Oppenheim, 1992), p. 210] Although, unlike with Likert-type scales, the number of uncertain responses is limited by the forced distribution of the statements in the Q sort there is still the risk that the respondent will use the instrument to give an account that they think is acceptable to the researcher rather than how they truly feel about an issue.

However, it is important to note that the factors which emerge from a Q methodological study are the result of the sorting activity of participants themselves rather than of built-in definitions. Thus, Q research always has the power to surprise; no assumption about the way understandings are structured is built into the method. Of course, how one reads the factors may be influenced by where one is coming from (Stainton Rogers, 1995). In addition the selection of the Q set remains the responsibility of the researcher. Therefore, an effective Q study

depends upon meticulous and thoughtful sampling of the propositions. People can 'tell a story' only if they have the appropriate statements with which to tell it. Thus, the start of a Q study involves a careful and methodical review of the things people write and say about the topic in question (Stainton Rogers, 1995).

Attitudes are a salient and fundamental concept within health education and health promotion for many reasons as discussed. This paper has argued the case for the use of Q methodology in studying and exploring attitudes within the field. It details what Q methodology is and how it is carried out, and discusses the strengths and limitations of the method. When compared with other measurement methods currently employed in the study of attitudes it can be seen that Q methodology takes the lead in providing a means of exploring subjective opinion. In conclusion, therefore, it is proposed that Q methodology is taken up by researchers within health education and health promotion who are concerned with the study of attitudes.

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