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How to ask sensitive questions in conservation: A review of specialized questioning techniques

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ABSTRACT

Tools for social research are critical for developing an understanding of conservation problems and assessing the feasibility of conservation actions. Social surveys are an essential tool frequently applied in conservation to assess both people's behaviour and to understand its drivers. However, little attention has been given to the weaknesses and strengths of different survey tools. When topics of conservation concern are illegal or otherwise sensitive, data collected using direct questions are likely to be affected by non-response and social desirability biases, reducing their validity. These sources of bias associated with using direct questions on sensitive topics have long been recognised in the social sciences but have been poorly considered in conservation and natural resource management.

We reviewed specialized questioning techniques developed in a number of disciplines specifically for investigating sensitive topics. These methods ensure respondent anonymity, increase willingness to answer, and critically, make it impossible to directly link incriminating data to an individual. We describe each method and report their main characteristics, such as data requirements, possible data outputs, availability of evidence that they can be adapted for use in illiterate communities, and summarize their main advantages and disadvantages. Recommendations for their application in conservation are given. We suggest that the conservation toolbox should be expanded by incorporating specialized questioning techniques, developed specifically to increase response accuracy. By considering the limitations of each survey technique, we will ultimately contribute to more effective evaluations of conservation interventions and more robust policy decisions.

1. Introduction

Effective conservation and natural resource management require the identification of the underlying causes of multiple threats to biodiversity such as overexploitation, habitat fragmentation and climate change (Lande, 1998; Thomas et al., 2004). Processes of human decision-making play a key role in understanding how humans use natural resources (Agrawal and Gibson, 1999), protect certain species while persecuting others (Treves and Karanth, 2003), support policy (Treves, 2009), and allocate research investments (Martín-López et al., 2009). Understanding the drivers and impacts of human behaviour is thus at the core of several disciplines and increasingly more attention has been given to their study in conservation.

Many human activities undermining the success of conservation and natural resource management strategies are illegal or otherwise sensitive (e.g. they are taboo; Jones et al., 2008; Keane et al., 2008). Examples of the consequences of illegal natural resource exploitation include extensive deforestation in Indonesia (Jepson et al., 2001); reproductive collapse in the saiga antelope (*Saiga tatarica*) (Milner-Gulland et al., 2003); and "fish wars" between and among user groups and managers in Southeast Asia fisheries (Pomeroy et al., 2007). Whilst indirect approaches for measuring the extent of illegal resource extraction exist (e.g. remote sensing of deforestation rates (Linkie et al., 2004); and analysing ivory seizures data (Underwood et al., 2013)), such techniques tell us little about the characteristics of rules breakers or what drives their behaviour. Yet effective conservation and informed policy decisions require an understanding of the drivers and impacts of human behaviour (St. John et al., 2013). Illegal or

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sensitive behaviour is thus a frequent source of uncertainty affecting management decisions and compromising evaluations of conservation interventions.

1.1. Assessing human behaviour

Among the methods used to assess human behaviour, for example indirect observation as applied in market surveys, self-reporting through diaries, or the consultation of law-enforcement records (Gavin et al., 2010; Knapp et al., 2010), questionnaires, delivered through face-to-face interviews or self-completed, are the most commonly applied. Questionnaires frequently assess behaviour through direct questions (e.g. "*Have you done X*" *Yes*/*No*). However, when the topic under investigation is illegal or otherwise sensitive, both non-response and social desirability biases can reduce the validity of data. For example, a non-random proportion of respondents may refuse to participate partly or wholly in the survey creating non-response bias (Groves, 2006); or respondents may provide dishonest answers in order to conform with prevailing social norms, introducing social desirability bias (Fisher, 1993). This tendency of respondents to answer questions in a manner that will be viewed favourably by others may result in under-reporting of undesirable behaviour, such as rule breaking, or over-reporting of desirable behaviour, such as rule compliance (Fisher, 1993).

These sources of bias associated with using direct questions on sensitive topics have long been recognised in the social sciences (e.g. Barton, 1958; Warner, 1965). A number of approaches have been applied in an attempt to identify and correct for these biases, such as relating self-reported behaviours to social-desirability scales (Lee and Sargeant, 2011); measuring comfort with answering sensitive questions (Zink et al., 2006); and analysing mood ratings before and after sensitive questions (Jackson et al., 2012). In addition, question wording or presentation has been manipulated in an attempt to increase reporting of sensitive information. For example, Näher and Krumpal (2011) used forgiving wording, whilst Acquisti et al. (2012) included dummy information on how others responded. Further, by convincing respondents that researchers can discern truthful answers despite what they say, for example, through biological validation, the bogus pipe line procedure seeks to encourage truthful reporting (Adams et al., 2008). The order of questions has also been considered; whilst it is generally recommended that sensitive questions are asked towards the end of questionnaires (Brace, 2008), Acquisti et al. (2012) provide some evidence that respondents are more likely to divulge sensitive information when questions are presented in decreasing order of intrusiveness.

Different modes of survey administration have also been adopted based upon the premise that increased privacy increases data validity. For example, anonymous self-complete answer sheets were posted into a ballot box to reduce bias in sexual behaviour surveys in Zimbabwe (Langhaug et al., 2011); Makkai and Mcallister (1992) assessed drug use by using a "sealed booklet", in which both questions and answers were coded; and Lindstrom et al. (2012) developed a "nonverbal response card" to assess sexual coercion amongst youth in Ethiopia. In addition, advances in technology have led to increased use of computers to deliver surveys, which are not necessarily restricted by literacy as Audio Computer-Assisted Self-Administered Interview (ACASI) systems exist. Highly portable tools such as personal digital assistants (PDAs) have also made an important contribution to investigating sensitive topics. For example, Langhaug et al. (2010) provide evidence that PDAs reduced reporting bias by respondents in developing countries when compared to asking questions about sexual behaviour face-to-face. Other modes of administration that may encourage more honest reporting by increasing respondents' perceived level of protection include video-enhanced self-administrated computer interviews, computer-assisted telephone interviews, internet-based surveys and interactive voice response (Tourangeau and Yan, 2007).

Interview setting and the presence of an interviewer or of other people whilst a questionnaire is being administered are also important factors that may affect people's responses, particularly when the topic is sensitive (Tourangeau and Yan, 2007). The behaviour and characteristics of the person delivering a questionnaire to a respondent can contribute to misreporting, for example survey responses may be influenced by the way in which a question is read out (interviewer behaviour), or the gender of the interviewer (interviewer characteristic). Catania et al. (1996) found that matching respondents and interviewers on gender or allowing respondents to select their interviewer's gender reduced the discrepancies in self-reported sexual behaviour, but that men and women were not equally affected by these interview conditions and also that these effects varied between topics. Interviewer gender effects have been suggested to occur even for recorded voices using ACASI (Dykema et al., 2012). Because the presence of a third party also affects reporting on sensitive topics, ideally, no one but the interviewer and respondent should be present during the administration of the questions (Tourangeau and Yan, 2007), particularly if that third person is not familiar with the information the respondent has been asked to provide and if the respondent fears any repercussions from revealing it to the bystander (Aquilino et al., 2000).

Whilst these approaches may, to varying degrees, encourage reporting of sensitive information, evidence suggests that data validity may be increased by applying methods specifically developed for investigating sensitive topics. Such methods, which we refer to as 'specialized questioning techniques' (also known as 'indirect questioning techniques'), developed in disciplines including political and health sciences, ensure respondent anonymity, increase willingness to answer honestly, and critically, make it impossible to directly link incriminating data to an individual (Warner, 1965; Chaudhuri and Christofides, 2013). Despite some recent applications (Solomon et al., 2007; Blank and Gavin, 2009; Razafimanahaka et al., 2012; St. John et al., 2012; Nuno et al., 2013b), most of these techniques have not been applied within a conservation and natural resource management context suggesting unaddressed potential to ask about illegal or otherwise sensitive topics using novel survey techniques. In this study we review methods specifically developed for investigating sensitive topics, providing examples and recommendations for their potential application in conservation.

2. Methods

To identify methods specifically developed for investigating sensitive topics we searched both ISI (Web of Knowledge) and Google Scholar with the following keywords: "sensitive question*", "indirect question*", "sensitive topic*" and "social desirability bias". We read abstracts for all publications and selected those that mentioned theoretical or empirical applications of methods developed to ask survey participants about sensitive topics. We also considered relevant studies cited by articles found via keyword searches. We did not aim to compile an exhaustive list of papers using each of the specialized questioning techniques found, but rather to identify: (a) the different types of specialized questioning techniques described in peer-reviewed literature and; (b) the different versions of each of the techniques found.

We described each method and recorded their main characteristics, such as data requirements (e.g. need for data on a non-sensitive characteristic), possible data outputs (e.g. estimate of behaviour prevalence, link to explanatory variables associated with behaviour),