1. INTRODUCTION

When using discrete choice experiments (DCEs) it is crucial to ensure that subjects are answering in a “rational” (internally consistent) way. One approach to testing rationality is to test the axiom of non-satiation, i.e. more is preferred to less. Within DCEs satisfaction of this axiom has been explored by including choices where one of the options has no worse levels for any of the attributes and better levels for at least one (See Chapters 4, 5 and 7 in this book and Ryan et al., 2001). Johnson and Mathews (2001) carried out different tests of choice consistency, including dominance, monotonicity across different pairs and so-called stability (repetition of identical choices within the same questionnaire). Transitivity of preferences has also been explored (San Miguel, 2000).

Much of the work in health economics has concentrated on just the identification of “irrational” responses. Such responses have been generally dropped from further analysis. As discussed by Lancsar and Louviere (2006), there are a number of reasons why this practice should be avoided, including the possibility of biased results (see also Rouwendal and de Bruij, 2004). However, it is still important to explain the inconsistencies found in individual choices (May, 1954; Earl, 1990; Sen, 1993). Consideration needs to be given to why individuals “fail” choice consistency tests. This chapter reports the results of a DCE set-up to test rational choice properties. Quantitative and qualitative methods are applied to better understand the reasons underlying “rationality” failures. Sections 2 and 3 describe the experiment including the various tests of rationality included (Section 2) and the quantitative and qualitative methods adopted to investigate “irrational” choices (Section 3).
Results are then presented in Section 4. Section 5 discusses the results with consideration given to their implication for the design of DCEs.

2. THE EXPERIMENT

2.1. Setting and Sample

Rationality choice properties were investigated within a DCE embedded in the realistic context of a wider study concerned with assessing patient preferences for nurses in primary care (Caldow et al., 2000). The conventional approach to investigating rationality within DCE is to include non-satiation (dominance) tests. However, it has been argued that such tests are easy to satisfy and that they may question the credibility of such experiments (Ryan et al., 2002; Ryan and Gerard, 2003). This study, in addition to traditional non-satiation tests, included two, arguably more stringent, rational choice tests based on Sen’s choice consistency properties (Sen, 1993, p 500); the contraction property (CP) test and the expansion property (EP) test (see below for details).

Three versions of a DCE questionnaire were designed to allow a number of rationality tests to be conducted. Each version contained a different total number of choices (i.e. Q6, Q8, Q10 reflected the 6, 8 and 10 choices, respectively in each questionnaire) which were randomly allocated to respondents. These different lengths of version were included in the design of the experiment to pick up an important sequence effect that was thought to take place when respondents answered a series of choice questions (see Section 3.1 for more details). The tests carried out and their allocation across the questionnaires is summarised in Figure 9.1.

In each questionnaire, subjects were asked to imagine “you have been feeling slightly chesty with an irritating cough for 2 weeks. You are still able to do all the things you usually do, but notice that you are a little out of breath when exerting yourself. For the past three or four mornings you have coughed up a little phlegm and you decide to ask for an appointment at your practice”. Respondents were told that their consultation could vary according to the attributes defined and offered a number of choices. For each choice respondents were asked to choose between two (A or B) or three (A, B or C) hypothetical consultations or a “neither” option. The “neither” option was included to give more realism to the exercise. Respondents were informed that choosing “neither” implied that they would not be seen in their practice about that illness. After completing the choices, respondents were asked to rate their difficulty on a scale from 1 (very easy) to 5 (very difficult).

The study population comprised a random sample of patients from 21 practices in Scotland. The practices were chosen from a list of general practitioner practices across Scotland about which information was available about the extended role of the nurse. Nine hundred and ninety-two postal questionnaires of Q6, 984 of Q8 and 975 of Q10 and two reminders were sent out.

2.2. Rationality Tests

Internally consistent choices require that if a choice set \( J \) is “contracted” or narrowed (to \( I \)) and the alternatives (or some of them) chosen from \( J \) are still in \( I \), then no unchosen alternatives should be chosen now and no chosen alternatives should be