Summary

Assessment of perceived health status or health-related quality of life (HRQoL) is becoming more and more relevant. HRQoL is a measure of perceived health status consisting of physical, mental, and social domains. There are different approaches to HRQoL measurement. In this thesis we focus on the preference-based framework, which captures a person’s overall health condition or health status in a single figure. Such single figures are referred to as values, as they explicitly incorporate weights reflecting the importance attached to specific health aspects.

The preference-based framework is used in several instruments (e.g., EQ-5D, HUI-3, SF-6D, AQoL). For this thesis we used the EQ-5D instrument, which comprises five domains: mobility, self-care, usual activity, pain/discomfort, and anxiety/depression. Some methodological drawbacks of its three-level version (EQ-5D-3L) prompted development of a new format (EQ-5D-5L). There is no clear evidence that the new format outperforms the standard version, however.

The objective of the first chapter was to make a head-to-head comparison of the EQ-5D-3L and EQ-5D-5L in a discrete-choice model setting. The discrete-choice valuation framework is grounded in modern measurement theory and is consistent with the random utility model in economic theory. The discrete-choice technique requires participants to make choices among two or more presented scenarios (choice tasks) described by means of specific domains (also called attributes) with certain levels. Special attention was paid to the consistency and logical ordering of coefficients for the attribute levels, as well as to differences in health-state values. Values derived from a large representative sample of the 3,698 members of the Dutch population using the same measurement framework for both versions showed slight differences between the EQ-5D-3L and EQ-5D-5L. No inconsistencies or illogical ordering of level coefficients were observed in either version. We reason that even small differences in the phrasing (language) of the descriptive system or the use of another measurement method could produce differences in values between these two versions.

One of the common features among preference-based instruments (e.g., SF-6D, EQ-5D, AQoL) is that they use statistical value functions comprising only the main effects for the separate health domains in their measurement procedures. Such functions rely on the simplifying assumption that the overall effect of all HRQoL domains equals the sum of the components’ effects (i.e., reduction in perceived health status may intensify if two different health problems interact). However, health domains are often related to and depend upon each other. In earlier studies (Feeny et al., 2002; Rowen et al., 2009) it was demonstrated that the effect of health-state domains is not simply additive, and that interactions may be important. In the development of the EQ-5D instrument the N3 term was used in several models to determine the presence of level-3 severity in any of the domains of the health state. However, no proof was found of either intuitive appeal or an improvement of model fit after inclusion of this omnibus interaction term. Therefore, the
objective of the **second** chapter was to investigate whether inclusion of second-order interactions in the EQ-5D-3L value function would result in better fit and lead to different health-state values than a model with main effects only. Using an efficient design, 400 pairs of EQ-5D-3L health states were generated in a pair-wise choice format. We analyzed responses of 4,000 persons from the general population using a conditional logit model and tested its goodness-of-fit. Overall, for the EQ-5D-3L, a value function based on interactions produced systematically lower values than a main-effects model, meaning that the effects of two or more health problems combined was stronger than the sum of the individual main effects.

Typically, the health-state values used in economic evaluations are derived from a representative community sample comprised mainly of healthy or relatively healthy persons on the grounds that, as taxpayers, they represent the general population. Recently, investigators in many countries have turned to deriving values from patient preferences, reasoning that patients are better informed about or more able to imagine certain health states and therefore better able to evaluate these. The **third** chapter uncovers differences between contrasting samples (people with disease experience versus currently healthy respondents) in the importance they assign to various EQ-5D-5L health states and in the underlying health-state values. The responses of 3,068 respondents were analyzed and the values assigned to each EQ-5D-5L health state were compared. Differences in appraisal of health states were found between individuals who had experienced disease and those who had not, resulting in dissimilarity in health-state values between healthy individuals and patients. This study emphasizes the importance of eliciting values from respondents who have experienced certain health states or diseases.

The **fourth** chapter examines differences between the two samples (general population and patients), although in a different setting than the EQ-5D instrument. The objective of this chapter was to determine the importance of certain criteria regarding new treatments and explore whether there are differences in preference for these criteria between the general population and patients. This issue is urgent since there is no agreement on whether currently used criteria for medical interventions reflect the preferences of the general population, nor on whether these differ from patient preferences. In this study, respondents were asked to choose between two hypothetical scenarios of patients receiving a new treatment. The scenarios graphically represent treatment outcomes and patient characteristics. Their preferences were strongly and significantly affected by additional survival years, age at treatment, initial health condition, and the patient’s lifestyle. The differences between patients and the general population appeared to be modest. However, apart from health gains, respondents thought the age of an individual as well as the cause and burden of disease were important factors in choosing which treatments should be provided to whom. This finding contradicts the assumptions underlying many of the procedures used to prioritize new medical interventions.
Summary

The aim of the fifth chapter was to explore the attendance to various information cues presented in the discrete-choice response tasks. A crucial assumption underpinning health measurement methods is that respondents pay equal attention to all information components presented in the response task. So far, no solid evidence has been found that respondents are fulfilling this condition. Eye-tracking was used to study the eye movements and fixations on specific information areas. This was done for seven discrete-choice response tasks comprising health-state descriptions. Videos of the eye movements of ten respondents were recorded and presented graphically. Frequencies were computed for length of fixation and number of fixations, and differences in attendance were demonstrated for particular health aspects in the tasks. All respondents completed the survey. Respondents were fixating on the left-sided health-state descriptions slightly longer than on the right-sided ones. Fatigue was not observed, as the time spent did not decrease in the final response tasks. The time spent on the tasks depended on the difficulty of the task and the amount of information presented. Eye-tracking proved to be a feasible method to study the process of paying attention and fixating on health-state descriptions in the discrete-choice response tasks.