Chapter 10

COGNITIVE STRATEGIES FOR RAB

In Chapters 5 through 9, we examined how people perform when called upon to make resource-allocation decisions in a variety of situations. We examined resource-allocation behavior under conditions of Certainty, Risk, and Uncertainty; in Harsh and Benign Environments; when Gains and Losses are possible; with objective functions of varying slopes; in both technical and commonplace tasks; and in two and three dimensions. But until now we have not addressed in any detail how individuals process the information necessary to make these resource-allocation decisions. It is our goal in this chapter to discover some of the cognitive strategies people use in approaching resource-allocation decisions. Here we will discuss how participants solve a 7-day meal-scheduling task similar to the one used in Chapter 9, but we will conduct a Verbal Protocol Analysis, a research methodology that allows a more detailed analysis of the cognitive processes involved in making such decisions. The contents of this chapter will be based on Ball, Langholtz, Auble, and Sopchak (1998), parts of which are reprinted here with permission. We will see in the research that is discussed, that a few participants attempted to first solve the problem and determine the maximum meals possible in a week before scheduling this solution across the seven days (solve-and-schedule strategy), but the majority of participants simply consumed meals on a day-to-day basis while checking resource availability each day to allow for full resource consumption (consume-and-check strategy).
Verbal Protocol Methodology

Verbal protocols are recognized as a major method for analyzing cognitive processes and have been used successfully within the areas of psychology, education, and cognitive science (Ericson & Simon, 1993). A number of researchers have successfully applied the verbal protocol procedure to examine various decision making problems (e.g., Harte, Westenberg, & van Someren, 1994; Montgomery & Svenson, 1989). The verbal protocol procedure requires participants to either verbalize their thought processes during the performance of a task (concurrent protocol analysis) or after completion of the task (retrospective protocol analysis). The recorded transcripts of these verbalizations are then segmented and encoded to provide a trace of the thought processes involved in making the decision or solving the problem. While protocol analysis has become a popular research procedure, it is not without its critics (Nisbett & Wilson, 1977). There are concerns that the verbalizations interfere with the thought processes and that not all the thought processes involved can be verbalized. It is further debated that the act of verbalizing may actually encourage the participant to perform the task in a way unlike that when performed naturally and when not being scrutinized. The influence of these possible confounds can be lessened somewhat through the use of valid protocol collection and analysis procedures (Ericson & Simon, 1993). Nonetheless, these criticisms must still be considered when evaluating the results of the present study.

Resource-Allocation Strategies

The meal-scheduling problem actually requires the solution of two separate but related problem components. The first component requires "solving" the problem regarding which combination of meal choices provides the maximum number of meals in a week given the limited amounts of resources (i.e., time and money) available. The second component requires the "scheduling" of these meal choices throughout the week to satisfy daily constraints on meal consumption (e.g., minimum of two meals per day and a maximum of four meals per day). Let us now examine some of the possible "solve-and-schedule" (SAS) strategies that could be used by participants in the present experiment.