

rigid boundaries between attention and other related cognitive processes such as perception (covered in Chapter 3) and working memory (covered in Chapter 5). To see why this is the case, consider the task of driving a car. Besides involving many physical skills—such as steering, braking, and (if you’re driving a car with a manual transmission) shifting—driving also involves many cognitive processes. Perception is obviously one of them: You need to quickly recognize relevant objects such as stop signs, pedestrians, and oncoming cars. Driving also requires mental effort or concentration—what cognitive psychologists call *attention*. The amount of attention required at any given time depends partly on the complexity of the situation around you; driving on wide side streets with no traffic is usually easier than driving during rush hour on crowded freeways. Your level of concentration also depends on your level of expertise at driving (Crundall, Underwood, & Chapman, 2002).

Recall your first driving experiences (assuming, of course, that you are a person with driving experience). Most people behind the wheel of a car for the first time wear a look of extreme concentration (as depicted in Photo 4.1). Gripping the wheel tightly, eyes darting at the street or parking lot ahead, the novice driver has great difficulty in carrying on a conversation, tuning the car radio to a favorite station, or eating a hamburger. Six months later, given both enough driving experience and normal conditions, the same driver may well be able to converse, fiddle with knobs, unwrap a sandwich, eat, and drive all at the same time.

Cognitive psychologists studying attention are concerned primarily with cognitive resources and their limitations. At any given time, they believe, people have only a certain amount of mental energy to devote to all the possible tasks and all the incoming information confronting them. If people devote some portion of those resources to one task, less is available for others. The more complex and unfamiliar the task, the more mental resources must be allocated to that task to perform it successfully.

Consider again the example of driving. The novice driver faces a complicated task indeed. The driver must learn to operate many mechanisms: gas pedal, brake, gear shift, clutch, lights, high-beam switch, turn signal, and so on. At the same time, while the car is in motion, the driver must scan ahead to see what is in front of the car (the road, trees, brick walls, etc.) and should



■ **Photo 4.1:** The task of learning to drive a car involves a great deal of cognitive processing.

also occasionally check the speedometer and the rear-view mirrors. That’s a lot to master, and (not surprisingly) it presents such a complicated set of demands that few cognitive resources are left for other kinds of tasks—talking, tuning the radio, fishing a stick of gum out of a purse or backpack, and applying makeup.

However, with practice, the driver knows exactly where all the mechanisms are and how to operate them. An experienced driver can “find” the brake pedal with little effort, for example. The practiced driver has learned how to operate the car, scan the road, and check relevant instruments all more or less simultaneously. With many more cognitive resources available to devote to other tasks, experienced drivers do all sorts of other things while they drive—listen to the radio, talk on car phones, plan their day, rehearse speeches, and so on.

Anyone who needs to operate complicated equipment or monitor many instruments simultaneously