By analyzing the concentration of phenylalanine in a newborn’s blood plasma, doctors can diagnose PKU and treat it with a phenylalanine-restricted diet. Most children with PKU who receive treatment have normal intellectual development (Beirne-Smith et al., 2002).

Toxic exposure through maternal substance abuse and environmental pollutants (e.g., lead poisoning) are two major causes of preventable mental retardation that can be combated with education and training (Howard, Williams, & McLaughlin, 1994; Schroeder, 1987).

Advances in medical science have enabled doctors to identify certain genetic influences strongly associated with mental retardation. One approach to prevention offered by many health service organizations is genetic counseling, a discussion between a specially trained medical counselor and prospective parents about the possibility that they may give birth to a child with disabilities on the basis of the parents’ genetic backgrounds. For discussions of...
ethical considerations of genetic testing for disabilities, see Beirne-Smith et al. (2002), Kuna (2001), and Smith and Mitchell (2001a).

**Amniocentesis** is a procedure in which a sample of fluid is withdrawn from the amniotic sac surrounding the fetus during the second trimester of pregnancy (usually the 14th to 17th week). Fetal cells are removed from the amniotic fluid and grown in a cell culture for about 2 weeks. At that time, a chromosome and enzyme analysis is performed to identify the presence of about 80 specific genetic disorders before birth. Many of these disorders, such as Down syndrome, are associated with mental retardation.

A new technique for prenatal diagnosis that may eventually replace amniocentesis is **chorion villus sampling** (CVS). A small amount of chorionic tissue (a fetal component of the developing placenta) is removed and tested. The most significant advantage of CVS is that it can be performed earlier than amniocentesis (during the 8th to 10th week of pregnancy).

Did working faster harm students’ accuracy? Not at all: the students answered correctly 85% of all the problems they attempted during the 10-minute work period, but their accuracy improved to 89% when time trials were used. When asked which method they preferred, 10 of the 11 students indicated they liked time trials better than the untimed work period.

Fluency training in the form of 1-minute time trials has been used successfully to help students with disabilities improve a wide range of academic, vocational, and other skills (e.g., Beck, Conrad, & Anderson, 1995; Binder, 1996; Johnson & Layng, 1994; McCuin & Cooper, 1994; Stump et al., 1992; Weinstein & Cooke, 1992).

**Guidelines for Conducting Time Trials**

- Keep the time for each trial short. One minute is sufficient for most academic skills.
- Do time trials every day. For example, a series of two or three 1-minute oral reading time trials could be conducted at the end of each day’s lesson.
- Make time trials fun. Time trials should not be presented as a test; they are a learning activity that can be approached like a game.
- Use time trials during the practice stage of learning, after students have learned how to do the skill correctly.
- Follow time trials with a more relaxed activity.
- Feedback to students should emphasize proficiency (total number correct), not simply accuracy (percentage correct).
- Encourage each student to try to beat his own best score.
- Have students keep track of their progress by self-graphing their best score each day.

**FIGURE A** Mean number of math facts answered correctly per minute by elementary students with mental retardation.


Conducted with a 20-second rest period between each time trial (equalling a total of 10 minutes, as in the first phase), the students’ correct rate increased to 13.2 per minute. Fluency improved to 17.3 problems per minute during a final phase, when immediate feedback and self-correction were conducted immediately after each of two consecutive time trials. Figure A illustrates the results.