# Psychology

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fetus is exposed to the sound of its mother's muffled voice (Ecklund-Flores, 1992). Immediately after birth, when newborns emerge from living 38 or so weeks underwater, they prefer this voice to another woman's or to their father's voice (Busnel et al., 1992; DeCasper et al., 1984, 1986, 1994).

At each prenatal stage, genetic *and* environmental factors affect our development. The *placenta*, which formed as the zygote's outer cells attached to the uterine wall, transfers nutrients and oxygen from mother to fetus. The placenta also screens out many potentially harmful substances. But some substances slip by, including **teratogens,** which are harmful agents such as viruses and drugs. If the mother carries the HIV virus, her baby may also. If she is a heroin addict, her baby will be born a heroin addict. A pregnant woman never smokes alone; she and her fetus both experience reduced blood oxygen and a shot of nicotine. If she is a heavy smoker, her fetus may receive fewer nutrients and be born underweight and at risk for various problems (Pringle et al., 2005).

There is no known safe amount of alcohol during pregnancy. Alcohol enters the woman's bloodstream—and her fetus'—and depresses activity in both their central nervous systems. A pregnant mother's alcohol use may prime her offspring to like alcohol. Teens whose mothers drank when pregnant are at risk for heavy drinking and alcohol dependence. In experiments, when pregnant rats drink alcohol, their young offspring later display a liking for alcohol's odor (Youngentob et al., 2007). Even light drinking can affect the fetal brain (Braun, 1996; Ikonomidou et al., 2000), and persistent heavy drinking will put the fetus at risk for birth defects and mental retardation. For 1 in about 800 infants, the effects are visible as **fetal alcohol syndrome (FAS),** marked by a small, misproportioned head and lifelong brain abnormalities (May & Gossage, 2001).

• Prenatal development
zygote: conception to 2 weeks
embryo: 2 weeks through 8 weeks
fetus: 9 weeks to birth •

"You shall conceive and bear a son. So then drink no wine or strong drink."
Judges 13:7

## The Competent Newborn

**2: What are some newborn abilities, and how do researchers explore infants' mental abilities?**

"I felt like a man trapped in a woman's body. Then I was born."
Chris Bliss

Having survived prenatal hazards, we as newborns came equipped with automatic responses ideally suited for our survival. We withdrew our limbs to escape pain. If a cloth over our face interfered with our breathing, we turned our head from side to side and swiped at it.

New parents are often in awe of the coordinated sequence of reflexes by which their baby gets food. When something touches their cheek, babies turn toward that touch, open their mouth, and vigorously root for a nipple. Finding one, they automatically close on it and begin *sucking*—which itself requires a coordinated sequence of reflexive *tonguing, swallowing,* and *breathing*. Failing to find satisfaction, the hungry baby may *cry*—a behavior parents find highly unpleasant and very rewarding to relieve.

The pioneering American psychologist William James presumed that the newborn experiences a "blooming, buzzing confusion." Until the 1960s, few people disagreed. It was said that, apart from a blur of meaningless light and dark shades, newborns could not see. But then scientists discovered that babies can tell you a lot—if you know how to ask. To ask, you must capitalize on what babies can do—gaze, suck, turn their heads. So, equipped with eye-tracking machines and pacifiers wired to electronic gear, researchers set out to answer parents' age-old questions: What can my baby see, hear, smell, and think?

One technique developmental researchers use to answer such questions is a simple form of learning called **habituation**—a decrease in responding with repeated stimulation. A novel stimulus gets attention when first presented. But the more often the stimulus is presented, the weaker the response becomes. This seeming boredom with familiar stimuli gives us a way to ask infants what they see and remember.

:: **zygote** the fertilized egg; it enters a 2-week period of rapid cell division and develops into an embryo.

:: **embryo** the developing human organism from about 2 weeks after fertilization through the second month.

:: **fetus** the developing human organism from 9 weeks after conception to birth.

:: **teratogens** agents, such as chemicals and viruses, that can reach the embryo or fetus during prenatal development and cause harm.

:: **fetal alcohol syndrome (FAS)** physical and cognitive abnormalities in children caused by a pregnant woman's heavy drinking. In severe cases, symptoms include noticeable facial

:: **habituation** decreasing responsiveness with repeated stimulation. As infants gain familiarity with repeated exposure to a visual stimulus, their interest wanes and they look away sooner.