people have claimed that there are satanic or otherwise harmful lyrics embedded backwards in some rock music. In most cases, when people first listen to the music backwards, they hear absolutely nothing that resembles speech. When somebody tells them to listen for particular words or phrases, however, people report hearing satanic words. As with illusory contours, the words are not really there until someone’s attention is focused appropriately on a particular set of sounds.

Further Reading

Fine motor skills
Skills involving control of the fingers, hands, and arms.

Fine motor skill involves deliberate and controlled movements requiring both muscle development and maturation of the central nervous system. Although newborn infants can move their hands and arms, these motions are reflexes that a baby cannot consciously start or stop. The development of fine motor skills is crucial to an infant’s ability to experience and learn about the world and thus plays a central role in the development of intelligence. Like gross motor skills, fine motor skills develop in an orderly progression, but at an uneven pace characterized by both rapid spurts and, at times, frustrating but harmless delays. In most cases, difficulty with certain fine motor skills is temporary and does not indicate a serious problem. However, medical help should be sought if a child is significantly behind his peers in multiple aspects of fine motor development or if he regresses, losing previously acquired skills.

Infancy
The hands of a newborn infant are closed most of the time and, like the rest of her body, she has little control over them. If her palm is touched, she will make a very tight fist, but this is an unconscious reflex action called the Darwinian reflex, and it disappears within two to three months. Similarly, the infant will grasp an object placed in her hand, but without any awareness that she is doing so. At some point her hand muscles will relax, and she will drop the object, equally unaware that she has let it fall. Babies may begin flailing at objects that interest them by two weeks of age but cannot grasp them. By eight weeks, they begin to discover and play with their hands, at first solely by touch, and then, at about three months, by sight as well. At this age, however, the deliberate grasp remains largely undeveloped.

Hand-eye coordination begins to develop between the ages of 2 and 4 months, inaugurating a period of trial-and-error practice at sighting objects and grabbing at them. At four or five months, most infants can grasp an object that is within reach, looking only at the object and not at their hands. Referred to as “top-level reaching,” this achievement is considered an important milestone in fine motor development. At the age of six months, infants can typically hold on to a small block briefly, and many have started banging objects. Although their grasp is still clumsy, they have acquired a fascination with grabbing small objects and trying to put them in their mouths. At first, babies will indiscriminately try to grasp things that cannot be grasped, such as pictures in a book, as well as those that can, such as a rattle or ball. During the latter half of the first year, they begin exploring and testing objects before grabbing, touching them with an entire hand and, eventually, poking them with an index finger.

One of the most significant fine motor accomplishments is the pincer grip, which typically appears between the ages of 12 and 15 months. Initially, an infant can only hold an object, such as a rattle, in his palm, wrapping his fingers (including the thumb) around it from one side, an awkward position called the palmar grasp, which makes it difficult to hold on to and manipulate the object. By the age of eight to ten months, a finger grasp begins, but objects can only be gripped with all four fingers pushing against the thumb, which still makes it awkward to grab small objects. The development of the pincer grip—the ability to hold objects between the thumb and index finger—gives the infant a more sophisticated ability to grasp and manipulate objects, and also to deliberately drop them. By the age of one, an infant can drop an object into a receptacle, compare objects held in both hands, stack objects, and nest them within each other.

Toddlerhood
Toddlers develop the ability to manipulate objects with increasing sophistication, including using their fingers to twist dials, pull strings, push levers, turn book pages, and use crayons to produce crude scribbles. Dominance of either the right or left hand usually emerges during this period as well. Toddlers also add a new dimension to touching and manipulating objects by simultaneously being able to name them. Instead of only random scribbles, their drawings include patterns, such as circles. Their play with blocks is more elaborate and pur-
poseful than that of infants, and they can stack as many as six blocks. They are also able to fold a sheet of paper in half (with supervision), string large beads, manipulate snap toys, play with clay, unwrap small objects, and pound pegs.

**Preschool**

The more delicate tasks facing preschool children, such as handling silverware or tying shoelaces, represent more of a challenge than most of the gross motor activities learned during this period of development. The central nervous system is still in the process of maturing sufficiently for complex messages from the brain to get to the child’s fingers. In addition, small muscles tire more easily than large ones, and the short, stubby fingers of preschoolers make delicate or complicated tasks more difficult. Finally, gross motor skills call for energy, which is boundless in preschoolers, while fine motor skills require patience, which is in shorter supply. Thus, there is considerable variation in fine motor development among this age group.

By the age of three, many children have good control of a pencil. Three-year-olds can often draw a circle, although their attempts at drawing people are still very primitive. It is common for four-year-olds to be able to use scissors, copy geometric shapes and letters, button large buttons, and form clay shapes with two or three parts. Some can print their own names in capital letters. A human figure drawn by a four-year-old is typically a head atop two legs with one arm radiating from each leg.

**School age**

By the age of five, most children have clearly advanced beyond the fine motor skill development of the preschool age. They can draw recognizably human figures with facial features and legs connected to a distinct trunk. Besides drawing, five-year-olds can also cut, paste, and trace shapes. They can fasten visible buttons (as opposed to those at the back of clothing), and many can tie bows, including shoelace bows. Their right- or left-handedness is well established, and they use the preferred hand for writing and drawing.

**Encouraging fine motor development**

Encouraging gross motor skills requires a safe, open play space, peers to interact with, and some adult supervision. Nurturing the development of fine motor skills is considerably more complicated. Helping a child succeed in fine motor tasks requires planning, time, and a variety of play materials. Fine motor development can be encouraged by activities that youngsters enjoy, including crafts, puzzles, and playing with building blocks. Helping parents with everyday domestic activities, such as baking, can be fun for the child in addition to developing fine motor skills. For example, stirring batter provides a good workout for the hand and arm muscles, and cutting and spooning out cookie dough requires hand-eye coordination. Even a computer keyboard and mouse can provide practice in finger, hand, and hand-eye coordination. Because the development of fine motor skills plays a crucial role in school readiness and cognitive development, it is considered an important part of the preschool curriculum. The Montessori schools, in particular, were early leaders in emphasizing the significance of fine motor tasks and the use of learning aids such as pegboards and puzzles in early childhood education. The development of fine motor skills in children of low-income parents, who often lack the time or knowledge required to foster these abilities, is a key ingredient in the success of programs such as Head Start.