


Normal Behaviors of Chickens in Small and Backyard Poultry Flocks

 articles.extension.org/pages/66175/normal-behaviors-of-chickens-in-small-and-backyard-poultry-flocks

Written by: *Dr. Jacquie Jacob, University of Kentucky*

Chickens are one of the most studied animal species, and researchers observed chicken behavior extensively. The term *behavior* can be defined as "the way in which an animal or person acts in response to a particular situation or stimulus." In 1935, research by **T. Schjelderup-Ebbe** (1894-1976) led to the recognition of a **pecking order**—a social hierarchy within chicken flocks.

More recent research has primarily focused on the importance of different "normal" behaviors in relation to animal welfare in a commercial operation. Research indicates, for example, that laying performance of chickens is influenced by human interaction. Producers should walk through the laying house a couple of times per day, selecting times that fit into the flock's egg laying cycle, such as in the early morning before the majority of the hens have started laying and later after laying time has ended. Producers should not walk through the house at peak laying time or the hens are likely to lay more eggs on the floor. By walking through the laying house, producers expose the chickens to low levels of stress, which the chickens get habituated to. This process is referred to as socialization.

Chick Behavior

Much early research on chicken behavior focused on determining which behaviors are instinctive and which are learned. In a study, chicks blindfolded from the onset of hatch until one to three days of age instinctively preened themselves and scratched on the ground. In addition, when given a worm, even if alone, these chicks ran around as though there might be others in pursuit of the worm. Research has shown that chicks instinctively show fear of stinging insects but try to catch flies. Some behaviors, however, have to be taught. For example, chicks peck at their own excreta until they learn not to. Chicks must also be taught to drink—when chicks are raised without a hen, producers must dip their beaks in water so that they learn to drink. (When the beak gets wet, the chick's drinking response is initiated.) Researchers have observed that chicks will not peck at a sheet of water, even if they are thirsty and standing in it. They will, however, peck at shiny objects or bubbles in the water.

Hen-Chick Relationship

There is some evidence of prehatching interactions between hens and chicks. Embryos and hens begin to vocalize the day before hatching and do so more and more often as hatching approaches. If an embryo begins to give a distress call, the hen vocalizes or moves on the nest and the embryo becomes silent or begins to emit pleasure calls. Hatching bobwhite quail chicks have been shown to interact with other chicks. The time of hatching may be advanced by having contact with a slightly more advanced clutch of eggs. This acceleration, however, takes place only when chicks are in the latter stages of incubation and pipping.

The main need of newly hatched chicks is warmth. Research has shown that chicks will press against any source of warmth if they are cold; the source need not be a hen. Contact with a human hand as early as 15 minutes after hatching, for example, has been shown to reduce the number of distress calls. The clucking sound of the hen has also been shown to reduce distress calls.

In studies, chicks that had not been exposed to the sound or sight of a hen ran to a box containing a hen and other chicks. This instinct to respond to the hen, however, is lost by eight days of age. When chicks from different hens were combined and allowed to mingle, they were able to locate the appropriate hen when the hens were placed with the group. After three weeks of age, the chicks were less effective in doing so.

Chicks are able to identify their mother hen by various means, but hearing seems to be an important one. When a sitting hen was removed in the dark from her chicks and another broody hen put in her place, the chicks still found their mother hen. When the hen was disguised by various means, her chicks came to her anyway. Vision does, however, appear to play an important role in helping chicks recognize their mother hen. When chicks from three different breeds of hens were removed and placed in a pen with hens of the same breed, most of the chicks were able to find to the correct breed of the mother hen. (That is, when placed in the new pen, chicks from a black hen went to the black hen, those from a red hen went to the red hen, and those from a white hen went to the white hen.) There were some chicks, however, who made mistakes.

Hens have no favorites when it comes to a brood of chicks. It is simply first come, first served. Vocal communication is important in the hen-chick relationship. If a chick is hidden from its hen, it gives distress calls, and the hen typically goes in the direction of the sound. If, however, the chick is in a glass container—so that the hen can see but not hear the chick—the hen takes no notice of the chick.

For the first 10 to 12 days after hatching, chicks stay close to the hen. After this age, they begin to feed independently of the hen but still sleep and warm themselves under her. This stage lasts from six to eight weeks of age. The time at which a hen disassociates from her brood varies, but it typically occurs before the chicks are 12 to 16 weeks of age. The hen initiates the breakup of the brood. She pushes her chicks away and then rejoins the other adult birds. If the hen is not able to return to other adults, she will remain in charge of the brood until the males in the group are mature and begin to dominate her. If she has only one or two chicks, she may tolerate her offspring longer than usual.

Chick-to-Chick Behavior

Recently hatched chicks do not typically show any competitive behavior until after three days of age. By 16 days of age, fighting to determine the pecking order begins. Research has shown that with groups composed entirely of female chicks, the pecking order is established by the 10th week. In small groups, the order is typically established earlier, around eight weeks. With groups of males, the social order may remain unresolved for many weeks.

Some early research has shown that certain chicks within a brood develop leadership roles. In a scenario in which there are two sources of heat, only one of which is turned on, chicks gather around the one turned on. If that heater is turned off and the other turned on, chicks move to the other heat source. In such a scenario, some chicks repeatedly respond sooner than others. A few of these leaders have been reported to leave the group under the warm heat lamp and go to a chick lagging in the cold so that the chick will follow the leader to the heat source.

Behavior of Mature Chickens

Individual Recognition

Birds that normally form a social hierarchy, such as chickens, doves, and pigeons, usually attack a new bird of the same species or breed that is introduced into the pen or cages. In order to develop a pecking order, birds must be able to recognize individuals in a flock. This ability allows them to identify and peck only those hens lower in the pecking order. It is not clear what clues chickens are using in order to identify individual chickens within a flock.

Early research examined the effect of returning an experimentally modified bird to a flock. If the bird was pecked, researchers assumed that the others in the flock did not recognize the bird. For example, it was shown that if the lippy comb of a hen was moved to the other side of the head, she was not recognized by the others in the flock. Similarly, when individual dubbed hens were returned to a flock, they were attacked by the hens that had previously been below them in the pecking order. If, however, a larger number of dubbed hens were returned to the flock, the chickens were able to develop a new pecking order. This would suggest that the comb is not the only factor used in identifying individuals in a flock. Research showed that individual birds react to feather changes and make adjustments. Intense color changes on white individuals are more effective in producing a loss of recognition than different shades or tints. Alterations of the head and neck were shown to be more effective in producing a loss of recognition than changes to areas of the main body. Although some features are more influential than others, no single feature is the sole means of recognition.

Recent research suggests that laying hens are able to recognize around 30 individuals. The social structure developed in small groups begins to break down in flocks of 30 to 60 birds. When there are more than 60 the birds in a flock, the chickens become less aggressive and more tolerant of each other.

Preening

Grooming activity in birds is referred to as **preening**. Feathers are important for insulation and waterproofing (in addition to flight for those birds that can fly). Feathers are composed of a shaft with several long thin structures called barbs. These barbs are held together by smaller barbules. Sometimes the barbs are pulled apart, which makes the feather ineffective for insulation and waterproofing. A bird runs its feathers through its beak when it preens, which realigns the barbs and makes the feathers better able to perform their functions. Birds also need to keep their feathers oiled to prevent them from becoming brittle and to help with insulation and waterproofing. Birds have a single oil gland near the base of the tail, referred to as the preen gland. Birds pinch this gland with their beaks to extract a waxy oil, which they then apply as they pass their feathers through their beaks. Chickens preen on their own, but they prefer to do it as a group activity.

For more information about feathers, refer to the article on the [Anatomy of a Feather](#).

Fighting

Chicks start fighting when they are only a few weeks old. They are already starting to establish their rank in the flock. This fighting often continues until they reach maturity and the pecking order is well established. Sometimes fights occur among adult birds. This can occur when a member of the flock becomes tired of its position in the social hierarchy and decides to challenge a higher-ranking bird. More commonly, however, fights occur when a new bird is introduced into the flock and has to find its place in the pecking order or when a bird is reintroduced to the flock after a long absence.

Although both male and female chickens fight, fights between males tend to be more violent and are more likely to result in injury or death. When two birds are on the verge of a fight, they will eye each other and may casually circle around each other, each pretending to peck at something on the ground while watching the other. When the fight begins, the birds will raise their neck feathers and point their wings toward the ground, spreading them apart from the body. They will then stand as tall as they can and try to face each other down. If neither bird backs down, they will start pecking, scratching, and jumping at each other. They will also beat at each other with their wings.

Foraging

In the wild, jungle fowl spend 61% of their time foraging. Foraging behaviors include pecking and scratching at potential food sources, as well as looking for and sampling possible food sources. Providing chickens with a complete feed eliminates the need for foraging in order to obtain nutrients, but the hens will continue performing this behavior. Although finding food is not the ultimate goal of the foraging behavior in domesticated fowl, researchers have not yet been able to determine the motivation for this behavior. There are a number of theories, but little evidence to support them.

Nesting

Domestic hens prefer to lay in nests containing loose material that they can settle into, molding the material with their bodies and feet, and that they can manipulate with their beaks. When given a choice, the former condition is more important than the latter. It is important for pullets to have access to nesting boxes before they start to lay. If a hen will have jump up to nest, she must be trained to do so as a pullet. If she does not learn in the laying house, she could end up laying a greater number eggs on the floor. Birds are mimics, and the first layers become the teachers for the remaining pullets in a flock.

Hens can differ in their preference for nesting location. When a group of hens was given the choice between a nest box and a litter tray, the majority preferred the nest box. There were some hens, however, who preferred the litter tray. Those that selected the litter tray tended to spend more time exploring during the hour prior to laying an egg than did those that selected the nest box. Their final trip to the nest, when the egg was laid, was shorter for those that selected the litter tray.

The prelaying behavior of domestic chickens is similar for most hens. Before laying, a hen shows restlessness and begins to look for a nest, poking her head into the nest boxes provided. Between nest examinations, she typically resumes other behavior she had been performing—eating, preening, sleeping, and so on. Over time, the hen puts more and more of her body into the nest boxes she is examining, eventually entering one and settling down. Hens may stay in the nest after the egg is laid. They may later cackle and leave the nest. Different breeds may exhibit some aspects of prelaying behavior more than others. Leghorn hens, for example, typically show pronounced searching and nest-selection behavior. As a result, these hens spend more time visiting and investigating a number of potential nest sites before choosing one. In contrast, hybrid layers of brown-shelled eggs tend to sit longer in nests and perform nest building activities.

Prelaying behavior is triggered by hormones associated with the last **ovulation** and not by the presence of an egg in the shell gland. Normally, the prelaying behavior begins an hour or two before the egg is ready to be laid. If egg laying is delayed for some reason, the period for prelaying behavior will pass, and the hen will no longer be motivated to search for a nest. In these cases, the egg may be laid outside the nest while the hen goes about other activities. This can happen, for example, when dominant hens prevent subordinate hens from entering nests.

Dust Bathing

Dust bathing is the act of rolling or moving around in dirt to cleanse the skin and feathers of parasites, dead skin, and other skin irritants. It also helps prevent the buildup of the oil from preening. When chickens do not have access to dust baths, they will nonetheless go through the motions of dust bathing. In behavioral studies, hens have shown a willingness to work to gain access to material for dust bathing. (Note that access to a dust bath does not prevent feather pecking.)

Perching

Chickens have a desire to roost. At about three weeks of age, chicks start to jump up to higher surfaces. The structure of a chicken's claws ensures a firm grip while the chicken is perching and will prevent the chicken from falling off a tree branch, even when the bird is asleep. Chickens go to perches about half an hour before twilight, with the actual time depending on light intensity. For example, they will perch earlier than expected on a dull, cloudy day and later than expected on a bright, clear day. They seem to perch when the light is about 1.25 foot-candles. The "flying down" time in the morning is typically 30 minutes before dawn, at around 0.003 foot-candles of light. Again, the actual timing of this activity varies depending on the weather conditions. Chickens snuggle together during the night and start spreading out about two hours before the lights come on.

Responding to High Ambient Temperatures

Chickens can tolerate with cold weather better than hot. Chickens cannot sweat—they cool themselves by dunking their beaks in cold water or flapping their wings to air out their feathers. They may also pant when they are desperate to cool down.

Drinking

Chickens must have access to a supply of clean, fresh water. Water in the crop softens feed so that digestion can occur. Without water, dry feed forms clumps in the crop. The clumped feed can press on the bird's carotid artery, decreasing blood flow to the brain. This can cause paralysis and possible death. Poultry have a split in the upper hard palate of the beak that allows air into the nasal passages. This prevents a vacuum from forming in chickens' mouths. As a result, chickens rely on gravity to draw water into the crop. This is why chickens lift their heads after dipping their beaks in water.

For More Information

The behavior of the domestic chicken: A review of the literature. By D.G.M. Wood-Gush. *The British Journal of Animal Behavior*. 111(3):81-110.