



EFFECT OF SOME UNFAVORABLE BEHAVIORAL TRAITS ON THE BEHAVIOR OF BROILER CHICKS

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the chicks, the generations have passed it down from one generation to the next, leading to a behavior that keeps the chicks apart and afraid in the early days of life [4]. This causes some of the chicks to become confused, which further isolates and separates them from one another, especially in the early days after hatching [5]. The initial period of a broiler chick's life is crucial because of how quickly they develop and how little time they spend

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Abstract: This study was carried out on a poultry farm in the Department of Animal Production – College of Agriculture - University of Anbar and was achieved through two experiments, the experiment aimed to determine broiler chicks' undesired behavior, including fear, gathering, and isolation. Seventy-five unsexed chicks were used that belong to strain Ross 308 with the age of one day. Chicks were randomly distributed to five replications, each replicate contained 15 chicks. The fear behavior was studied by observing the situation in which the chicks of each repeater are present at different times of the day when observing the chicks, we counted the number of isolated chicks, that is, located at the corners of the field, and recorded them, considering that they were very afraid. Chicks that are a little far from the corner were considered Medium afraid, and those that are farther away from the corner are a little afraid. As for the chicks that are spread out, far from the corners and walls, they are considered natural and not afraid, this is what was applied to each repeater (color) and at each of the specified times to take Data per day during the trial period. The results showed significant differences between the treatments in each of the traits of fear, grouping, and isolation due to the natural stimulator (sound) to broiler chicks.

Keywords: Undesired Behavior, Behavioral Performance, Broilers, Fear Behavior.

1. Introduction

The broiler chick is one of the animals that are precocial because when it hatches, it can rely on itself for food. Because of their advanced growth and the fact that their bodies are covered in feathers, broiler chicks can easily open their eyes, run, and jump [1]. Therefore, their interaction with the hens is restricted to imparting knowledge that would enable them to live comfortably and safeguard the hens, the Critical Period helps the chicks follow the hen during the hatching process [2]. As a result, the absence of the hen from the chicks as a result of artificial hatching may result in a scenario of disorder behavior, which changes the chicks' behavior and induces a feeling of anxiety in them [3]. Because of the development of this fear in

being raised. This is because the first week makes up about 15-20% of the total time they spend being raised, and mistakes made in these early days can't be rectified; instead, they must be avoided. At the age of marketing, a loss of one gram of body weight at the age of one day results in a decrease of 100 g of body mass [6].

The most frequent errors and issues that arise in the early stages of the rearing period are behavioral issues like anxiety, isolation fear, and gathering, which limit their intake of feed and water and so affects the marketing weight. These behavioral issues are a result of genetic improvement and selection for features that increase productivity, and they are a harmful side consequence of these processes [7]. The most frequent errors and issues that arise in the early stages of the rearing period are behavioral issues like anxiety and isolation in fear and gatherings, which limits their intake of feed and water and so affects the marketing weight. These behavioral issues are a result of genetic improvement and selection for features that increase productivity, and they are a harmful side consequence of these processes [8]. Biological factors, such as sound, can have an impact on cognitive learning, which is crucial for the growth of the brain's nerves and for feeling [9]. Chicks' morphological changes and biological processes are enhanced by biological stimuli like sound and light, which also increases their mobility [4].

Fear can have a negative impact on one's health as well as productivity in husbandry systems [8]–[13]. Fear can be understood as an animal's response to perceived danger and, under ideal conditions, is an adaptive state designed to shield the animal from psychophysical harm [10]. According to [11], various aspects, such as novelty and physical traits (movement, intensity, duration, suddenness), affect the quality of the terror reaction [12]. As an expression of fear, active avoidance can be seen as a general fear response. Exploration is thought to counterbalance fear.

Animals explore their environment or novel stimuli and approach them in order to, e.g., find food or water, which makes this exploration behavior essential for survival [13]. The information gathered from the animal's exploratory behavior is also important for foraging or roosting and for identifying and avoiding predators and environmental hazards, and leads to a general exploration of their environment [14]. Fear is also strongly negatively correlated to exploration [15]. If the animals' capacity for coping and adaptability is exceeded, an imbalance of fear and exploration may result in chronic stress [16]. Reducing this ongoing stress on animals is vital to increase their welfare. Particularly in husbandry systems, animals are frequently exposed to unfamiliar items or human contact and are kept in confined spaces, inhibiting, for example, an escape response. One sign of successful adaptation to potential environmental changes in animals is a diminished fear response to unfamiliar stimuli or humans [17].

The purpose of this study is to discover some undesired behaviors in broiler chicks that negatively impact the health of the chicks, cause fear and anxiety, and ultimately reduce productivity. This study is amid natural cues to detect these undesirable behaviors. In order to increase behavioral features and consequently productivity, this study aims to uncover these undesired behaviors and highlight the natural behaviors.

2. Materials and Methods

This study was conducted to determine what are the behavioral problems in chicks and how to solve these problems using natural stimuli (sound of hen). This experiment was carried out in the fields of the Department of Animal Production / College of Agriculture / University of Anbar for a period of 14 days, using 100 one-day-old birds from unsexed broilers of (ROSS 308) strain. Randomly to 20 replicates of 20 birds for each replicate, as each replicate was colored in a different color than the other replicate. The behavior of chicks was monitored by surveillance cameras, and behavioral data were taken at six different times of the day (2 am, 6 am, 10 am, 2 pm, 6 pm and 10 pm). The birds were raised in a semi-enclosed pen of 3×4 dimensions. Provide all the requirements of regular rearing. Behavioral traits were studied as follows:

When observing the chicks, we counted the number of isolated chicks, that is, located at the corners of the field and recorded them, considering that they were very afraid. The fear behavior was studied by observing the situation in which the chicks of each repeater are present at different times of the day. Chicks who are a little farther away from the corner are a little more frightened than those that are closer to it. This was applied to each repeater (color) and at each of the stated times to capture Data every day during the trial period. As for the chicks that are dispersed, far from the corners and walls, they are regarded natural and unafraid [16]. The shape of the assembly and the quantity of chicks present in it for each replication were calculated in order to study the behavior of the group.

This was applied to each repeater (color) and at each of the specified times to take a picture. When the number of chicks is less than five, it is considered normal and not gathering, when the number is between five and ten chicks, it is considered a little gathering, when the number is between ten and fifteen chicks, it is considered medium gathering, and when the number of chicks present in one place is more than fifteen, it is considered densely gathering [16], [18].

By tallying the number of chicks in each of the four field locations, the behavior of approaching and keeping a distance was investigated. This was applied to each repeater (color) and at each of the specified times to take Data per day during the trial period. The data included the number of chicks that were close to the wall, the number of chicks that were slightly farther from the wall, the number of chicks that were a medium distance from the wall, which are in the middle of the distance between the wall and the middle of the field, and the number of chicks that were in the middle of the field [18].

The chicks were exposed to the natural stimulus (sound), which is the hen chicken voice, by using a headset (mini speaker), hanging above the feeder at a height of 50 cm. The sound source is a voice recorder with a frequency (20-30dB) as the sound is played every four hours once for an hour (2 am, 6 am, 10 am, 2 pm, 6 pm, 10 pm), the chickens received the management and provision of feed and water [6]. The Ki-Square statistical test for non-parametric traits was used to find out the extent of differences between the observed and expected values, and the data were analyzed using the statistical program SPSS, as well as using the Excel program to display the results [19]

3. Results and Discussion

Figure (1) shows the percentage of fear during the experiment before and after exposure to the natural stimulus (sound), as there is a significant difference in the percentage of very fear for the experimental chicks amounted to 100%, while the percentage of fear after exposure to the natural stimulus (sound) was 55%. Concerning the medium afraid percentage, it is noted that the number of chicks before exposure to the natural stimulus was 100%, while the percentage after exposure to the natural stimulus (sound) was 40%. From the same figure, note that the percentage of chicks before exposure to the natural stimulus (sound) was 100%, while the percentage was Little after exposure to the natural stimulus was 69%, while the percentage of those who were not afraid before exposure to the natural stimulus (sound) was 28.6%, while the percentage after exposure to the natural stimulus was 70%.

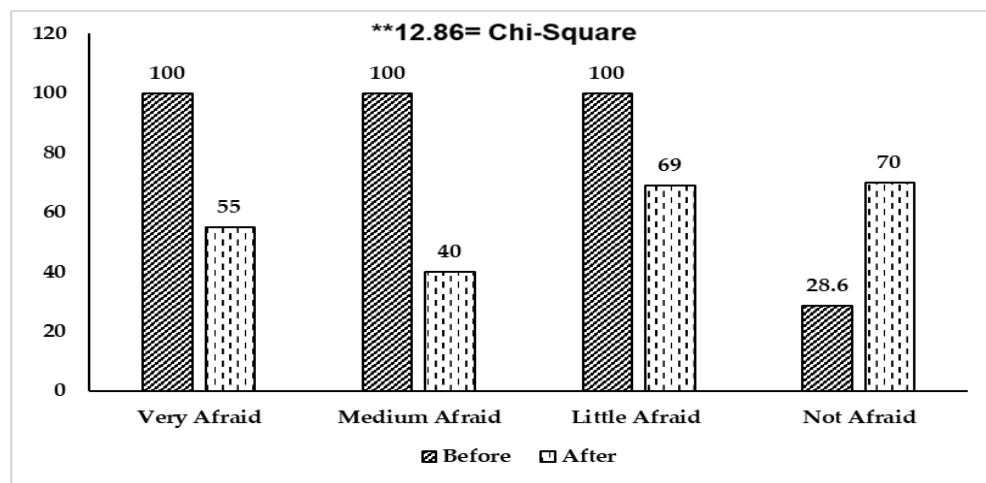


Figure 1. Shows the percentages of fear during the experiment.

20 replicates of 20 birds for each replicate, as each replicate was colored in a different color than the other replicate. The behavior of chicks was monitored by surveillance cameras, and behavioral data were taken at six different times of the day (2 am, 6 am, 10 am, 2 pm, 6 pm and 10 pm).

Figure (2) shows the percentage of gathering in the experiment before and after exposure to the natural stimulus (sound), as there is a significant difference in the rate of very gathering, as the percentage of the very gathering was of 100%, while the percentage of this trait was after exposure to the natural stimulus (sound) was

34%. The medium gathering rate, it is noted that the ratio before exposure to the natural stimulus was 100%, while it became 23% after exposure to the natural stimulus (sound). From the same figure, noted that the percentage of a little gathering before exposure to the natural stimulus (sound) was 71.2. While this percentage after exposure to the natural stimulus became 28.6%, as for the non-gathering, it was 15.4% before exposure to the natural stimulus (sound), while after exposure to the natural stimulus, the percentage became 56.7%.

Figure (3) show the rate of approach behavior in the experiment before and after exposure to the natural stimulus (sound) that there is a significant difference in the ratio of very approach behavior for the experimental chicks. For the trait, it was 23% before exposure to the natural stimulus (sound), while the ratio was after exposure to the natural stimulus (sound) 100%. However little approach behavior, it is noted that the ratio was also before exposure to the natural stimulus 53.3%, while the ratio after exposure to the natural stimulus (sound) was 76.4%, and from the same figure, note that the ratio of the medium approach behavior was before exposure for the natural stimulus (sound) 34% and after exposure to the stimulus it became 66%, while the percentage of normal approach behavior (not approach) was 55.5% before exposure to the natural stimulus (sound), while the percentage after exposure to the natural stimulus became 84.7%.

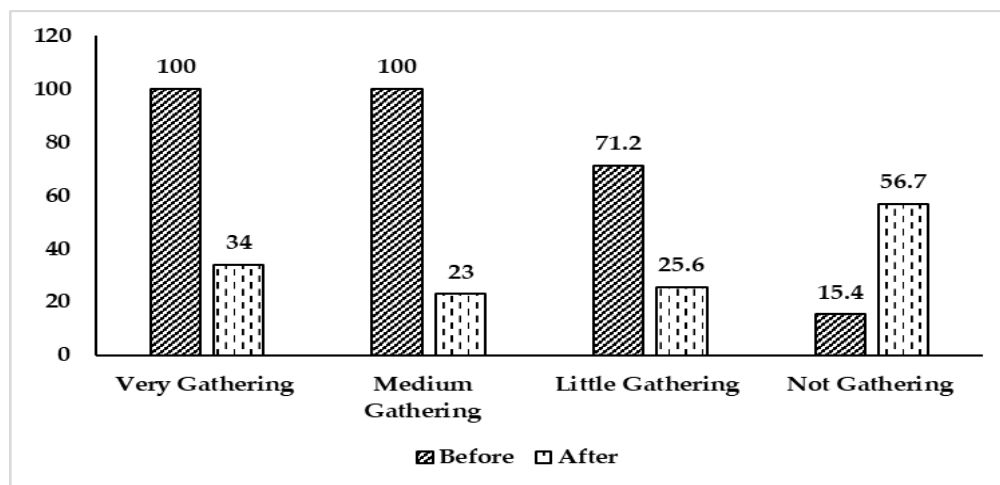


Figure 2. Shows the percentages of gathering during the experiment.

20 replicates of 20 birds for each replicate, as each replicate was colored in a different color than the other replicate. The behavior of chicks was monitored by surveillance cameras, and behavioral data were taken at six different times of the day (2 am, 6 am, 10 am, 2 pm, 6 pm and 10 pm).

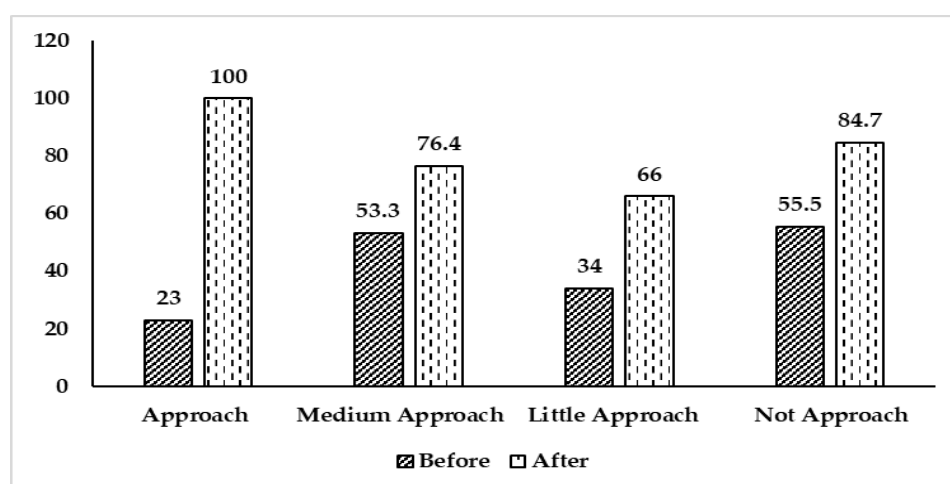


Figure 3. Shows the percentages of approach during the experiment.

20 replicates of 20 birds for each replicate, as each replicate was colored in a different color than the other replicate. The behavior of chicks was monitored by surveillance cameras, and behavioral data were taken at six different times of the day (2 am, 6 am, 10 am, 2 pm, 6 pm and 10 pm).

Since it is instinctive for chicks to stay with the hen during artificial hatching, the absence of the hen causes the chicks to feel afraid because they believe that no one will look after them [20]. The effect of hearing the natural stimuli (sound) that work to relax and numb and therefore work the chicks to get closer to the sound that they feel safe and therefore stay longer periods near the sound causes the release of opioids from the brain cells. This results in the feeling of comfort and safety for the chicks when they hear the stimulating sound of the hen. He said this because it was her favorite [9]. Opioids have played an essential role in the development of social connections, the development of approach behavior, the enhancement of sensations associated with learning in young chickens, and the reinforcement of the relationships created throughout the imprinting process.

Based on the information presented above, it can be inferred that the issue of fear of chicks can be resolved by using natural stimuli, such as the hen voice or any other sound that helps the chicks feel safe and comfortable [21]. The gathering of chicks in one place is considered an undesirable behavioral trait, because it indicates the presence of one of the factors that contribute to the fear or distance of the chicks, such as the presence of anxiety or the presence of weather conditions such as cold, and all these cases make a proportion of the chicks distant and isolated and gather among themselves in the form of blocks [22].

Consequently, this gathering works to inflict some physical and psychological harm to the body, such as causing scratches or wounds in the chicks' bodies, which eventually results in the emergence and development of an undesirable behavioral condition, specifically the behavior of predation and cannibalism, which causes the mortality of many chicks [23]. According to the aforementioned figures, it appears that there has been a change in the behavior of the flock of chicks, which could be explained by the natural stimuli that may have helped to eliminate or cancel the behavioral disorder in the young birds as well as the compulsive phase that they go through where they fear something will harm them or prey on them, breaking this characteristic of flocking and causing the chicks to neither return to nor gather [8]. One of the behaviors of chicks that trigger the presence of an inherited psychological factor is the percentage of approach and distance behavior from the wall or distant, dark places. Through exposure to pressures like fear, strong noise, strong lighting, an unbalanced diet, or their sense of danger that threatens them, a case of hereditary stress syndrome is generated, leaving the chicks perpetually in a state of anxiety, fear, and isolation [24].

The increase in the frequency of approaching natural stimuli (sound) can be attributed to the influence of sound on chicks, who respond to natural stimuli by changing their position, developing their brains and nervous systems, and changing their sensory cognition [25]. Through performing this, the chicks can respond to a natural stimulus by making their chosen sound, which they associate with the hen and find reassuring and comforting [26]. This leads the chicks to feel that there is a chicken hen that will take care of them and protect them, and thus the chicks rest and relax, and then the chicks become more active and the motor ability increases, the behavior of the chicks develops, and their feeling of comfort and relaxation increases when they hear the appropriate sound because of the development of her brain, as the development of the brain increases the biological processes in the body [27].

4. Conclusion

Through the current study, undesirable behavioral traits (fear of gathering and isolation) were identified in broiler chicks. These undesirable behavioral parameters that affect the health and production of chicks were then modified using natural stimuli (sound), which resulted in a significant improvement in the welfare and health of the chicks, which was reflected in an improvement in their behavioral performance.

Supplementary Materials:

No Supplementary Materials.

Author Contributions:

S. M. Abdulateef and S. S. Shawkat; methodology, writing—original draft preparation, A. I. Mohammed and S. A. Rashid; writing—review and editing, S. M. Abdulateef; paraphrasing. All authors have read and agreed to the published version of the manuscript.

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The study was conducted in accordance with the protocol authorized by the University of Anbar, Ethics Committee, Iraq in cooperation with The Islamic Republic of Iran, from a commercial farm, fertile eggs from Ross (308) strain broiler breeder hens were obtained.

Informed Consent Statement:

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Data Availability Statement:

No Data Availability Statement.

Conflicts of Interest:

The authors declare no conflict of interest.

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