

AGONISTIC BEHAVIOR OF LABORATORY MICE

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SUMMARY

In this work we study agonistic behavior of laboratory white mice when they are kept in captivity. For all this experimental work we used direct observation of mice, in small lists, because we need a reduced space to emphasize characteristics of agonistic behavior.

Relations between members of the same species that live in organized groups are based in most cases on hierarchical structure. Relations between leader and subservient, decided by fighting, involve a thorough observation between individuals.

Each member of a group has its own place on the hierarchical scale depending on results of fights – it can be leader or it can be subservient, depending on if it wins or loses the fight. Once hierarchical scale made, every animal will adjust its behavior.

After analyzing the obtained data we have enough reasons to believe that after fights the winner, usually, is the massive mouse, but it is also very important the sexual ripeness, so the immature male will be beaten. The leader male had a big exploring area and it checks up all territory.

The females can be more aggressive, its fights are more brutal, than male fights are, when they fight for supremacy, but in this case fights are not as frequent as in the case of males. Always the superior female, on hierarchical scale, shows males its own statute, so the strongest genes will be perpetuated.

KEY WORDS: *laboratory mice, running behavior, submissive*

INTRODUCTION

The purpose of this study was to point out sequences of agonistic behaviour of laboratory mice that live in societies based on hierarchical system.

The paper deals with mouse ethology and uses as research method the direct investigation of subjects in a very small area, because in this way we can have a real contact between investigated subjects in a short time.

Because there is no accurate definition of agonistic behaviour I. Eibl - Eibesfeldt draws us a diagram of this behaviour (fig. 1.) [1].

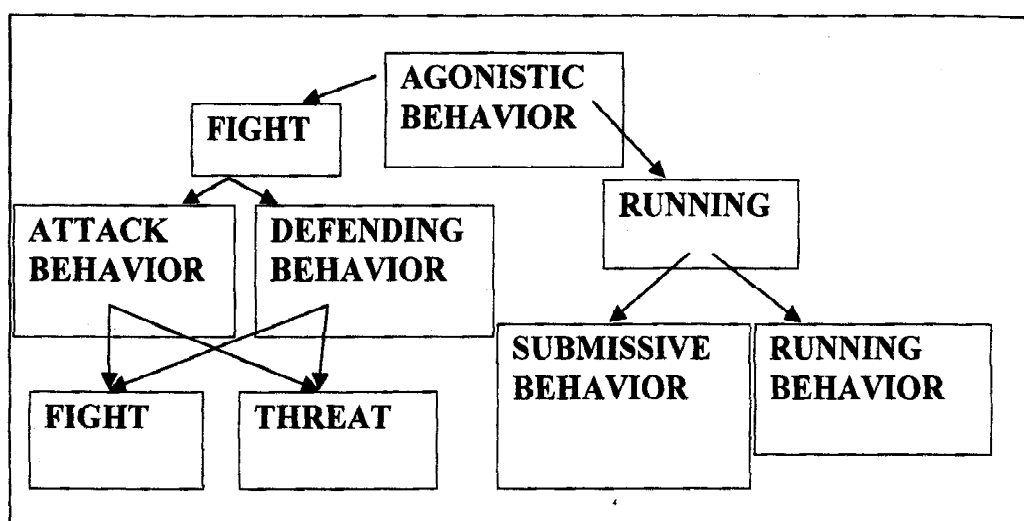


Fig.1. Sketch of agonistic behaviour

Running behaviour is a particular type of behaviour and it starts when animals try to rescue it self. Running reactions is caused by higher proximity of enemy and subject wants to hide. When enemy reaches the minimal proximity, called defence distance, subject is changing its running in a brutal defence reaction [2, 4].

One of major forms of aggressive reaction is the ritual fight (Hellenic fights), called by K. Lorenz and E. Eibesfeldt tournament fight [2].

The subservient male always has a submissive behaviour towards its opponent - turning the head in a opposite direction from its opponent, arching back, tail stands up - a position similar whit the one used in copulation.

This type of behaviour called oposement behaviour usually avoids fights, but it can not stop a fight that was already started [3].

Laboratory mice that are living in cages have a social organization based on exclusive dominance of a single male. The hierarchy in most cases leads to a work division, and consequently to species fights are more frequently.

The female can be more brutal than male, when they fight for supremacy, but in this case fights are not as frequently as male fights. Always the superior female, on hierarchical scale, shows males what is its statute.

MATERIALS AND METHODS

For all this experiments we used: laboratory white mice, acetic acid 2 %, special lists (100x100x30 cm), laptop HP, digital cam, cam mounting, video interface PINNACLE and experimental data. The work procedure involved direct observation of mice. Before every experiment the lists were cleaned with acetic acid (2%) in order to clean the „signal code” left behind by other mice.

Each experiment lasted between 20 and 25 minutes, the observations were made from appreciably distance, because we did not want to disturb their behaviour.

In order to avoid mice exhaustion we never used the same animal sequentially and the experiments were made once at three days. We choose this method in order to get properly results and because we wanted to avoid all emergent problems that might be caused by intensively using mice.

An unexpected thing is the fact that white laboratory mice are common animals used to live in captivity so that it does not present abnormal behaviour if it is not disturbed by external agents.

RESULTS

For every agonistic behaviour sequence the arithmetic mean was made for all results obtained and noted in a table like table I

Tabel I. Arithmetic mean of behaviour sequences

FIXING	4
Smelling	33
Climbing	19
Combing	12
Scratching	9
Hair bristling up	3
Climbing + strike with forelegs	2
Hellenic fight	1
Running	2
Escape jump	1
Tare	1
Submissive	2

The aggressive behaviour usually begin with fixedly look at the adversary.

Behaviour sequences of male leader or for subservient male when they are introduced in the same time into arena are showed in fig. 2 and 3.

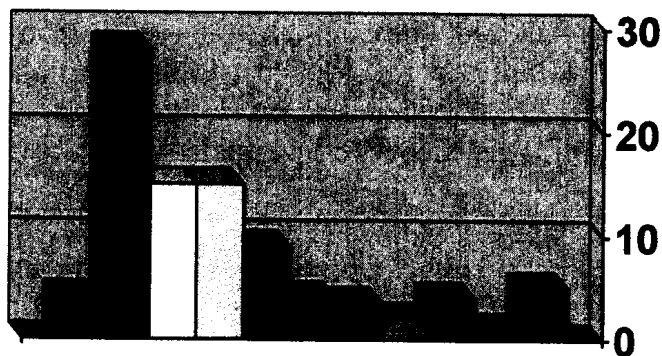




Fig. 2. Activity diagram of leader male

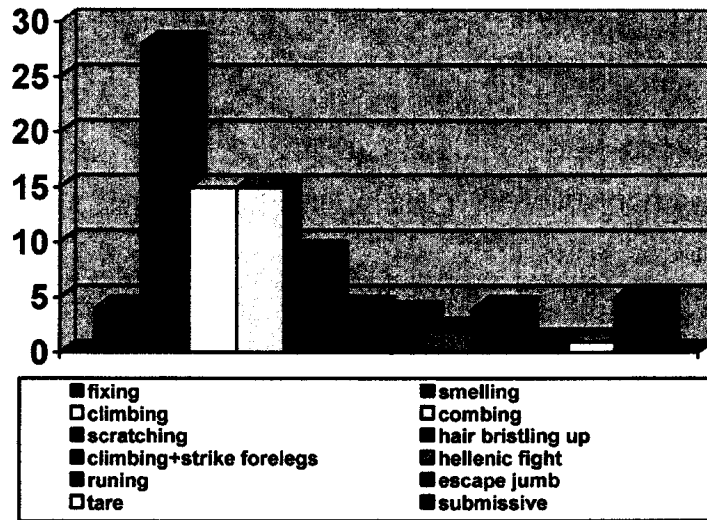


Fig. 3. Activity diagram of subservient male

Behaviour sequences of female leader or for subservient female, when males are present, were very carefully observed and presented as diagrams in fig. 4. and 5

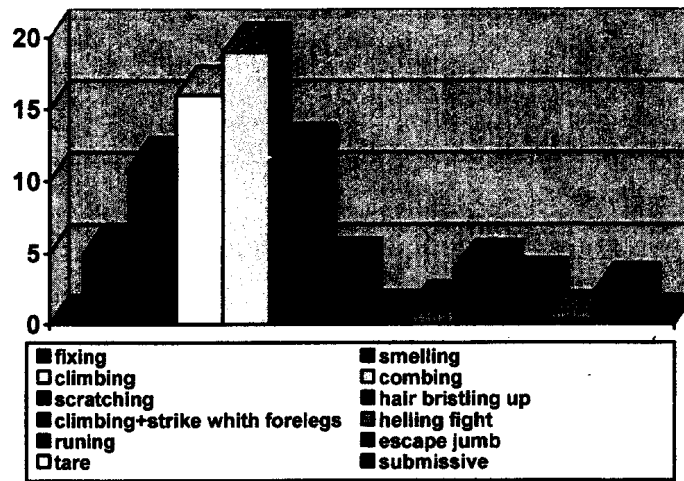


Fig. 4. Activity diagram of leader female when males are present

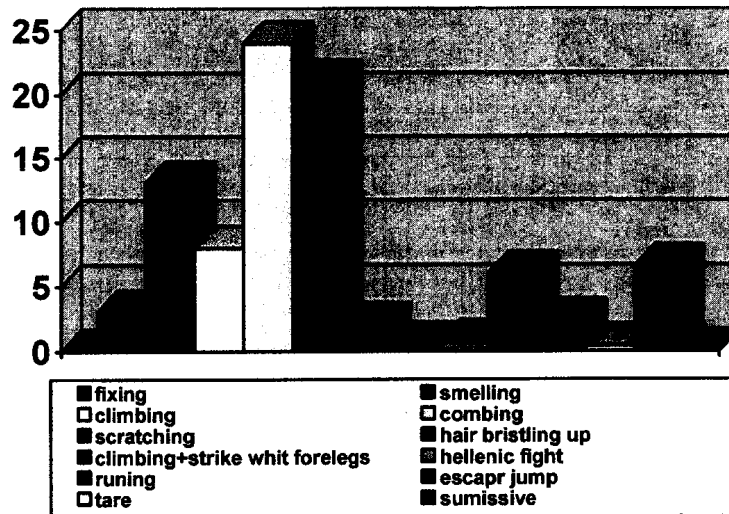


Fig. 5. Activity diagram of subservient female when males are present

DISCUSSIONS

After data analysis was made we observed that fights are not always violent, sometimes fights bring out as Hellenic fights, which will first sit will be submissive.

The leader males are more active than subservient males, they will check up all territory and subservient are forced to reduce their activity and to adopt a oposition behaviour what involves scratching and combing in many occurrences

The leader male frequently strikes whit forelegs while subservient male prefers Hellenic fight and escape skips, this is helping it to leave quickly conflict area. The subservient males are always grouping and after 26-35 days a new leader will stand up of all these.

When males are present the leader female shows clearly to the males a submissive behaviour (scratching and combing), nevertheless females do not diminish their exploring, like subservient males, what announces its hierarchical statute.

When the males are present, subservient female sensible reduces its exploring and first of all shows clearly to the males a submissive behaviour against leader females. Fights between females for hierarchical statute are sometimes very brutal but in this case fights are not as frequently as the male fights are.

The big question is if all these hierarchical fights are coming to support evolution of species, knowing that the way evolution acts is by natural selection.

Therefore, if species are permanently in competition, process called by Darwin survivor fights, then individuals are acting as a insignificant part and can be sacrificed in any moment if interest of society calls it, like a pawn in a game.

So, we can say, if a population always presents individuals able to be sacrificed for whole society benefit, than that population has less chance to disappear when compared against a population where individualism persists. Maybe in the future nature will be populated only whit individuals able to be sacrificed for the benefit of the species.

CONCLUSION

1. Competitions between animals (males or females) are not always resolved by fighting.

2. Sometimes it is enough a simple threat who is coming from male leader for the subservient male to leave the conflict area and to recognize the superiority of the dominant one.
3. After fights, usually, the winner is the massive mouse, but sexual ripeness is also very important, so the immature male will be beaten
4. Approximately after a month a new leader stands up from the defeated group, where the fights are more frequent.
5. The female can be more aggressive than the male when they fight for supremacy, but in this case fights are not as frequent as male fights are
6. Always the superior female, on hierarchical scale, shows males what is its statute.

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