Heterosexual attraction in dogs¹

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The time spent by male dogs near females and females near males was measured when females were in estrus and not in estrus. In Experiment 1, five males spent 35% of their time near the cages of four estrous females and less than 1% of their time near the same females when they were not in estrus. In Experiment 2, females spent 7.5% of their time near caged males when they were in estrus and less than 1% of their time near males when they were not in estrus. The differential response of males and estrous females to each other seems to result from differences in the normal mating pattern of each sex.

The observation that males congregate in the vicinity of a bitch in estrus, although frequently cited (e.g., Fuller & DuBuis, 1962; Scott & Fuller, 1965), lacks experimental confirmation. The present study tests this notion and another one which states that the estrous bitch is as eager to get to the male as he is to get to her (Whitney, 1955).

EXPERIMENT 1

Method

Two-year-old beagles from four litters were used as Ss, five males and four females. All Ss had previous copulatory experience.

Tests were conducted daily between 8:00 and 10:00 AM in both fair and foul weather. Before the tests began, the females were put in individual pens measuring 8 x 20 ft. which bordered a 3/4-acre, enclosed field. These pens consisted of an inner sheltered portion and an outer run. Pens were separated from each other by a wall and from the adjacent field by thick mesh wire.

Each male was released into the field for 5 min. The time that males spent near each caged female was noted from a nearby observation tower. A male was considered to be near the cage of a female if he was no more than one body length away from the wire and oriented in the direction of the female. The order in which males were released and the daily assignment of pens to females were varied in a manner which prevented systematic error.

A female was considered in behavioral estrus on those days in which copulation with an experimental male resulted in a genital lock. These tests were conducted late in the afternoon of test days. Three females came into estrus naturally. The other female, Dell, was administered two intramuscular injections of estradiol benzoate² (.38 mg/kg Schering "Progyon," 3.3 mg/cc in sesame oil) spaced 48 hr. apart. Dell came into estrus 5 days after the second injection.

For analytical purposes, the term "nonestrus" was used to refer to a period equal in days to each female's estrous period. The days in this period dated from 30 days before or 30 days after the first and last day of the female's estrous period.

Testing began in mid-December and continued through to mid-March, a total of 90 days. During this period, the mean temperature at the start of each day's testing was 52°F with a range of 41-68°F. The Ss were fed their daily rations 15 min. prior to testing.

Results

The percentage of total field time spent by each male near the caged females is shown in Table 1. As a group, males spent 35% of their time near females in estrus and less than 1% of their time near the same females in nonestrus. Some males spent more time with estrous females than others. The daily percentage

Table 1.

Percentage of Total Field Time Spent by Each of Five Males near Caged Females when the Latter were in Estrus and Nonestrus

Males	Females in Estrus	Females in Nonestrus
Broadus	50.3	.9
Ken	41.0	.9
Eddie	38.8	.2
John	28.5	0
Clark	16.8	.4
Mean	35.1	.48

of time spent by all males near each caged female is plotted in Fig. 1. It is clear that males devoted a substantial amount of time to females only when they were in estrus. Values representing the response to non-estrous females never rose above the 10% level on any given day and are not shown in the figure. Even when no female was in estrus, during the interval between days 25 and 62, males spent little time near the caged females. The peaks of the response curves

Fig. 1. Percentage of daily field time spent by five males near caged females. (The arrows point to the days when Dell was injected with estradiol benzoate.)

Table 2. Percentage of Total Field Time Spent by Four Females, in Estrus and in Nonestrus, near Five Caged Males

Females	Days in Estrus	Estrus	Nonestrus
Blanche	8	6.0	.4
Peggy	12	9.2	0
Kate	8	6.9	.2
Agnes	19	7.9	0
Mean		7.50	.15

in Fig. 1 indicate that all females were most attractive to males near the middle of their estrous periods.

Males whined, barked and pawed the cages of an estrous female or attempted to make contact by licking, sniffing or pawing her body. Some estrous females showed great excitement, presenting their hind-quarters and deviating their tails in the posture of acceptance, while others either ignored the male or growled at him. Females usually retreated to the inner, sheltered portion of the pens during wet weather. Foul weather did not appear to dampen the ardor of the males.

EXPERIMENT 2

Method

These tests were conducted in the same way as those above except that the males were penned while the females ran free. Four females were used, three from the previous experiment. Plus an additional female. The males were the same ones used in Experiment 1. The Ss were tested for 70 days, beginning in August and ending in October. The mean temperature was 61°F with a range of 48-81°F. Three females were brought into estrus with exogenous hormones; the remaining female, Peggy, came into estrus naturally.

Results

The percentage of time spent by females near caged males is shown in Table 2. All females were more responsive during estrus than during nonestrus. However, the percentage of time estrous females spent near males in this experiment is much lower than the percentage of time males spent near estrous females in Experiment 1 (7.5% vs. 35.0%).

Females did not differ substantially among themselves with regard to magnitude of response to males, however, two females spent most of their time with a single male (Agnes: 86% with Broadus; Peggy: 73% with Eddie) whereas the other two spent time with several males.

Estrous females visited males often but only for short periods of time. Usually, they sat 10-20 ft. away from the pens, faced the males and whined. Periodically, the female would approach a male, sniff him or the cage, and then return to her previous spot. The typical reaction of the caged males to an estrous female in the field was to bark, whine and jump against the wire walls of their cages. When a non-estrous female was released, the males were quiet.

DISCUSSION

The present results suggest two conclusions: (a)

male and female dogs are maximally attracted to each other when the latter are in estrus, and (b) during this period, males are more attracted to females than vice versa. The sex difference in performance seems to reflect the basic differences in the normal mating patterns of each sex. Normally, the male initiates sexual activity by investigating or mounting the female. The bitch either stands passively, or like several other mammalian species (e.g., the rat), she may interrupt the male's activity by running away from him, only to stand once again when he pursues her. If the male does not give chase, the bitch often returns to him and solicits his attention. Once he responds, she may run away again. Breeders call this behavior "teasing" and consider it a positive sign of behavioral estrus. Under the conditions of Experiment 1, the male that spent his time in the proximity of the caged estrous female was behaving much as he would if the female were free; he was "chasing" her. When the conditions were reversed as in Experiment 2, the natural tendency of the female was not to remain near males but to run away from them. Because they could not chase her she might return to their cages, but did not stay long. Under existing conditions, females tended to compromise the dilemma by sitting a short distance away from the males and whining.

Other observations made on the same males used in the present study revealed that those who spent the most time near caged estrous females (Table 1) were the most "efficient" copulators as defined by the number of tests with an estrous female in which a genital lock occurred (Beach & LeBoeuf, in press) and, moreover, once these males achieved insertion, they remained tied with the bitch for a longer period of time (Le Boeuf, 1965).

References

- Beach, F. A., & Le Boeuf, B. J. Mating preferences in female dogs. *Anim. Behav.*, (in press).
- Fuller, J. L., & DuBuis, E. M. The behaviour of dogs. In E. S. E. Hafez (Ed.), *The behavior of domestic animals*. Baltimore: Williams and Wilkins Company, 1962.
- Le Boeuf, B. J. Sexual interactions in dogs. Paper presented at symposium on Hormones and Behavior, Duke University, May, 1965.
- Scott, J. P., & Fuller, J. L. *Genetics and the social behavior of the dog*. Chicago: University of Chicago Press, 1965.
- Whitney, G. D. *This is the beagle*. Orange, Conn.: Practical Science Publishing Company, 1955.

Notes

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2. The hormones were supplied by Dr. Preston L. Perlman of the Biological Research Department, Schering Corporation, Bloomfield, New Jersey.