THE ASSESSMENT BY AVOIDANCE TEST OF THE HUMAN-ANIMAL RELATIONSHIP IN DAIRY CALVES

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Abstract

The positive effect of a good human-animal relationship was demonstrated on the production, health, behavior and mental state of farm animals, especially when positive interactions take place in the early stages of life. The on-farm management system in dairy farms can potentially have influence on the relation between people and calves, given the different schedule of the daily procedures. The aim of this study was to conduct a comparative assessment of the human-animal relationship in dairy calves in farms with tie-stalls and loose housing based on the results of avoidance testing. A number of 146 dairy calves (in three different age categories) were assessed in five farms during the cold season. A standardized technique of human avoidance test was used, awarding scores depending on the individual avoidance distance of the observer by the calves. The results were statistically processed with the SPSS software. The youngest calves (up to two months old) had the highest scores within the standardized avoidance test, meaning less avoidance toward the observer. When the tie-stall farms were compared with the loose farms, no statistically significant difference (P>0.05) was found regarding the human-related behavior of the calves. The assessment of the calves' behavioral response toward humans using the avoidance testing showed that in this study the human-animal relationship was not influenced by the housing system, most probably because the management of the calves was similar in all the five farms.

Key words: dairy calves, human-animal relation, human avoidance test.

INTRODUCTION

The human-animal relation was defined as the degree of closeness or distance between the animal and human (Estep and Hetts, 1992), meaning the reciprocal perception of the animal and human that develops and expresses by their mutual behavior (Waiblinger et al., 2006). According to Estep and Hetts (1992) the human-animal relationship is a dynamic process in which the previous interactions between the animal and humans ensure a basis for a stable relationship and which have than a feedback effect on the nature and perception of future interactions. In principle, a relationship of this type needs either individual mutual recognition or the generalization by the animal of the experiences with a specific human person also on other people (Waiblinger at al., 2006). As regards young animals, these cumulate experience and the interactions with humans represent a novelty for them. For this reason, the quality of human-animal relationship is important in these for the formation of some perceptions, for the development of certain attitudes towards a person but also generally towards humans, as a response to the quality of interactions with people. In calves, it was proven that early positive interaction with humans reduces their fear, human related reactivity and stress levels during handling (Boissy and Bouissou, 1988; Boivin et al., 1998). It seems that gentle human handling has long-lasting positive effects (stress reduction) especially when it takes place in early life stages, after the calves are born (Probst et al., 2013). It seems that simpe habituation with the human presence have a beneficial effect on the behavioral response of the calves towards people, as the majority of the fear responses are trigerred in those calves that had minimal contact with people, comparing with those handled more frequently, irrespective if the interactions with humans were negative or positive (Petherick et al., 2009a,b). The lack of human contact in the early period of the calves' lives is associated especially with a defensive behavior (Le Neindre et al., 1996).

Given the fact that the every-day management can be different depending on the housing and

management system of the farm (loose and tie-stall systems), the aim of this study was to conduct a comparative assessment of the human-animal relationship in dairy calves in farms with tie-stalls and loose housing based on the results of avoidance testing.

MATERIALS AND METHODS

This study was accomplished between January 2012 and May 2013. During this period five farms were visited (Bistrita-Nasaud and Cluj counties), evaluating a total number of 146 calves of different ages. For selecting the farms and deciding the moment of the visits it was taken into account the accessibility of the location, numbers of the animals, and agreement of the farmer to take part in the study and the possibility for the observer to spend time near the calves without disturbing the usual daily activities of the farms.

Farm 1 had loose housing system, but with permanent housing (without outdoor access of the cows). In the moment of the visit, there were 30 Holstein Friesian calves (5 calves between 0 and 2 months, 13 between 3 and 5 months and 12 between 6 and 7 months), were kept in three collective stalls, according to their ages, in the same barn with the cows.

In farm 2, also with loose housing, 42 calves were assessed (16 calves with ages between 0 and 2 months, 14 between 3 and 5 months and 12 between 6 and 7 months). Part of the calves was Holstein Friesian and others were mixes between Holstein and beef cattle.

The other 3 farms (3, 4 and 5) had tie stalls for the cows and the calves were kept in collective stalls. There were 5 calves in farm 3 kept all together; 36 calves in farm 4 (13 calves up to 2 months of age, 17 between 3 and 5 months and 6 calves older than 6 months) and 36 calves in farm 5 (a collective stall with calves up to 2 months of age, two stalls with a total number of 17 calves between 3 and 5 months of age and a stall for the calves older than 6 months of age). In all of the farms, the calves were separated from their mothers immediately after birth and all the male calves were sold when they reach the age of 2 months. They were fed with milk up to the age of 2 months and then with hay and cereal meals. The only farm where the calves were released to suck from their mothers was the farm 3. The hay and cereal meal was presented to calves about one week before weaning. None of the farms allow access to water for the unweaned calves, but only after weaning.

In order to assess the human-animal relationship in calves the avoidance test was used, respecting the methodology and technique proposed by Leruste et al. (2012). The assessor entered in the collective stall, waited for one minute, for the calves to get used with his presence, then chose one calf at an approximate distance of 1.5m, having the head oriented in the direction of the assessor. The behavioral response of the calf was scored according to four possible categories: (1) the assessor is able to establish visual contact with the calf; (2) the assessor is able to make a step towards the calf, with the arm flexed in 45 degrees ahead from the bodyline, and the calf stays still at least one second; (3) the assessor is able to make the second step towards the calf which stays still at least another second; (4) the assessor is able to touch the head/nose of the calf without startling it. The test ended when the calf moved in the opposite direction from the assessor. At the end of the test scores were recorded from 0 to 4 (0 = impossible to establish visual contact with the calf; 1 = visual contact; 2 = approaching with one step; 3 = approaching with two steps; 4 = touching the calf without startling it).

The recorded scores were processed by calculating the descriptive statistical indicators and by comparing the results obtained for the calves in the two different housing systems. For the statistical processing of the data the SPSS statistical software was used.

The differences were considered significant if $P<0.05$.

RESULTS AND DISCUSSIONS

The descriptive statistical parameters for the scores obtained in the calves' avoidance test are presented in table 1.

Table 1. The descriptive statistical indicators for the scores of human avoidance test and the significance of difference between the two housing systems

Age category	Farm with loose housing			Farms with tie stalls			P value
	Mean ± sd	Median	Range	Mean ± sd	Median	Range	
0-2 months	3.28 ± 1.21	4.00	0.00-4.00	3.00 ± 1.24	3.00	0.00-4.00	>0.05
3-5 months	2.33 ± 1.51	3.00	0.00-4.00	2.31 ± 1.53	2.00	0.00-4.00	>0.05
6-7 months	2.46 ± 1.58	3.00	0.00-4.00	2.50 ± 1.50	3.00	0.00-4.00	>0.05

sd = standard deviation

If P < 0.05, the difference between the two systems is significant

As shown in table 1, no significant differences (P > 0.05) were found between the results of the human avoidance test in the calves from the two housing systems. In the study of Leruste et al. (2012), for calves of approximately 15 weeks old the authors obtained a mean score of 1.7 ± 0.1, with intervals from 1.0 to 2.8. In both housing systems assessed in the present study, higher scores were obtained for any of the age categories. These results could indicate an adequate interrelation between the farm workers and the calves. However, interpreting the results of human-animal relationship assessment needs always precaution, because many environmental and individual factors can influence these. As Boissy et al. (2007) highlights that the behavior of the calves towards humans can be shaped by curiosity, exploratory behavior. In the case of the youngest calves (between 0 and 2 months of age) this aspect could have a role, explaining why their mean scores were the highest within this study (Table 1). In the same time, the older calves could have been afraid of humans if they had negative experiences in the past in relation with people. In usual conditions (as it was in the assessed farms), the calves' contact with humans is short, only during feeding and barn cleaning, not enough for building a positive human-animal relationship.

Table 2 presents the proportion of the calves that could be touched by the assessor in the human avoidance test. In a study investigating the effect of early manipulation of calves by humans Schütz et al. (2012) asessed the calves at the age of 4 weeks by the human avoidance test. In the group in which the calves were manipulated positively in their first days of life, 45% accepted to be touched by the assessor, comparing with only 20% from the group in wich the calves were handled negatively immediately after their birth.

Table 2. The percentage of the calves that could be touched in the human avoidance test

Age category	Percentage of calves that could be touched	
	Loose housing	Tie stall housing
0-2 months	57.14	44.82
3-5 months	44.44	34.48
6-7 months	37.5	31.25

In this study within the age category of 0-2 months almost half of the calves from tie stall barns and even more in loose housing could be touched (Table 2) by the assessor. These values can be considered high and could indicate positive early experiences of the calves in relation to humans. Yet, it should be mentioned that in the study of Schütz et al. (2012) the testing of the calves took place in an unfamiliar environment (in a fenced arena), not in their familiar surrounding, as it was made in the present study. The familiarity of the testing environment could influence the results of behavioral tests in animals. For example, it was demonstrated that the social circumstances (presence or absence of the conspecifics, possibility or impossibility of visual contact with consepecifics) affects the behavioral response of cattle towards humans in test conditions (Grignard et al., 2000). Otherwise it is difficult to compare the data obtained in this study with the results of other researchers due to the fact that the studies in this area are not very extended.

The absence of the significant diferences within the human-animal relationship testing

results in the calves in the two different housing systems is most probable due to the fact that even if the housing system was different in the farms, the calves were kept similarly, irrespective if the cows were tethered or not.

CONCLUSIONS

The assessment of the behavioral response of the dairy calves towards people by the human avoidance test showed that the human-animal relationship is not influenced by the housing system used in the investigated farms, most probable because the fact that the calves were kept similarly in all farms.

REFERENCES

Boissy A., Bouissou M.F., 1988. Effects of early handling on heifers' subsequent reactivity to humans and to unfamiliar situations. Applied Animal Behaviour Science, 20, 259-273.

Boivin X., Garel J.P., Mante A., Le Neindre P., 1998. Beef calves react differently to different handlers according to the test situation and their previous interactions with their caretaker. Applied Animal Behaviour Science, 55, 245-247.

Estep D.Q., Hetts, S., 1992. Interactions, relationships and bonds: the conceptual basis for scientist–animal relations. In: Davis H., Balfour A.D. (Eds.), The Inevitable Bond - Examining Scientist-Animal Interactions. CAB International, Cambridge, 6-26.

Grignard L., Boissy A., Boivina X., Garel J.P., Le Neindre P., 2000. The social environment influences the behavioural responses of beef cattle to handling. Applied Animal Behaviour Science, 68, 1-11.

Le Neindre P., Boivin X., Boissy A., 1996. Handling of extensively kept animals. Applied Animal Behaviour Science 49, 73–81.

Leruste H., Bokkers, E.A.M., Heutinck, L.F.M., Wolthuis-Fillerup, M., van der Werf J.T.N., Brscic M., Cozzi G., Engel B., van Reenen C.G., Lensink B.J., 2012. Evaluation of on-farm veal calves' responses to unfamiliar humans and potential influencing factors. Animal, 6(12), 2003–2010.

Petherick J.C., Doogan V.J., Holroyd R.G., Olsson P., Venus B.K., 2009a. Quality of handling and holding yard environment, and beef cattle temperament: 1. Relationships with flight speed and fear of humans. Applied Animal Behaviour Science, 120, 18-27.

Petherick J.C., Doogan V.J., Venus B.K., Holroyd R.G., Olsson P., 2009b. Quality of handling and holding yard environment, and beef cattle temperament: 2. Consequences for stress and productivity. Applied Animal Behaviour Science, 120, 28-38.

Probst J.K., Hillmann E., Leiber F., Kreuzer M., Spengler Neff A., 2013. Influence of gentle touching applied few weeks before slaughter on avoidance distance and slaughter stress in finishing cattle. 2013. Applied Animal Behaviour Science, 144, 14-21.

Schütz K.E, Hawke M., Waas J.R., McLeay L.M., Bokkers E.A.M, van Reenen C.G., Webster J.R., Stewart M., 2012. Effects of human handling during early rearing on the behaviour of dairy calves. Animal Welfare, 21,19-26.

Waiblinger S., Boivin X., Pedersen V., Tosi M.V., Janczak A.M., Visser E.K., Jones R.B., 2006. Assessing the human-animal relationship in farmed species: A critical review. Applied Animal Behaviour Science, 101,185–242.