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Stroking Different Body Regions of Dairy Cows: Effects on Avoidance and Approach Behavior Toward Humans

C. Schmied,*[1] X. Boivin,† and S. Waiblinger*
*Institute of Animal Husbandry and Animal Welfare, Department of Veterinary Public Health and Food Science, University of Veterinary Medicine Vienna, Veterinärplatz 1, 1210 Vienna, Austria
†Equipe Adaptation et Comportements Sociaux de l'Unité de Recherches 1213 sur les Herbivores, Institut National de la Recherche Agronomique, Laboratoire Adaptation des herbivores aux milieux, Centre de Recherche Zootechniques et vétérinaires de Theix, 63122 St Genés Champanelle, France

ABSTRACT

Understanding perception of dairy cows to common human contact such as stroking is important for improving the human-animal relationship, animal welfare, and production. We hypothesized that repeated stroking of body regions licked most during social grooming, especially the ventral neck, would reduce cows' avoidance of and increase their approach to humans. Sixty tethered dairy cows were randomly allocated to 4 treatment groups that received 5 min of daily human contact 5 d/wk during 3 consecutive weeks: 3 groups were stroked on different body regions. The first group was stroked on the ventral part of the neck (neck); the second group on the withers (both licked often in social grooming); the third group on the lateral side of the chest (chest, licked rarely); and the last group (control) was exposed to simple human presence. The reactions to the person who had provided the treatment were measured using 2 tests in the home tie-stall assessing avoidance from an approaching person who tried to touch the head (approaching person test) and avoidance/approach reactions to a stationary person (stationary person test). Approach behavior was recorded in a novel environment using a standard arena test. In the home tie-stall, cows stroked on the neck showed less avoidance (median avoidance score: 3.33) in the approaching person test compared with cows stroked on the chest and the controls (both: 4.00). That is, at least 75% of the animals stroked on the neck tolerated the touching of their heads (75th percentile ≤ 3.75), whereas at least 50% of the cows in the other treatment groups did not accept it. The stationary person test did not reveal any differences between the treatment groups. In the arena test, the 3 stroked groups showed more approach behavior (median latencies to contact: from 145 to 240 s) compared with simple human presence (300 s), but stroking treatments did not differ from each other. Stroking, particularly the neck, reduced avoidance of and increased approach reactions to humans in both the home tie-stall and the arena. Increasing acceptance of being touched after being stroked on the neck suggests that this procedure should be adopted to improve routine handling of dairy cattle.
Key words: cattle, human-animal relationship, tactile stimulation, animal welfare

INTRODUCTION

Improving the human-animal relationship is important because it has beneficial effects on animal welfare and production as well as human working conditions and safety (Rushen et al., 1999; Hemsworth, 2003; Waiblinger et al., 2006). Genetic selection and improvement of handling facilities may help to attain this goal, but it is crucial to improve the human-animal interactions throughout life of an animal by avoiding aversive and enhancing positive or pleasant interactions with humans (Boivin et al., 2003; Waiblinger et al., 2006). The handling of animals might be improved by imitating the species-specific behaviors for establishing social bonds, which suggest that the best places for touching animals are those where they groom each other (Rushen et al., 1999). In cattle, social licking contributes to building and maintaining social affiliative relationships, characterized by spatial proximity between individual cows, increased tolerance, socio-positive interactions and social support in conflicts or challenging situations (Sambraus, 1969; Sato, 1984). Moreover, social licking likely reduces social tension within the herd (Waiblinger et al., 2002). During routine practices in dairy cattle husbandry, some stock people regularly use gentle tactile interactions such as stroking, resembling the tactile stimulation of social licking by another cow (Hemsworth et al., 2000). In previous studies, tactile stimulation of cattle by a human was mostly used to-

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Corresponding author: claudia.schmied@vu-wien.ac.at

gether with other forms of contact such as talking or offering food (de Passillé et al., 1996; Munksgaard et al., 1997). Results on effects of gentle tactile stimulation per se without other forms of contact on their reactions to humans are still controversial in cattle (Boivin et al., 1998; Jago et al., 1999).

The manner of stroking (e.g., the body region onto which the tactile stimulation is directed) has received little attention, but may be influential. An uneven distribution of social licking at different body regions in cows (Sambraus, 1969), together with differing reactions of the licked animals (Schmied et al., 2005), suggests that tactile stimulation was perceived differently depending on the region. Because social licking was linked to affiliative social relationships in cattle, this could implicate that stroking the body regions licked most, like the dorsal (19%, median of total social licking) and ventral part (16%) of the neck, could be more effective for improving the relationship of cows to humans than body regions licked rarely such as the lateral part of the chest (0%). In a recent study in cattle, differences in immediate behavioral and physiological (heart rate) reactions to human stroking of body regions often or rarely licked in social licking were detected (Schmied et al., 2008). When the ventral part of the neck was stroked, cows more likely showed behavioral reactions similar to those observed during social licking (e.g., neck stretching) and had similar physiological responses (i.e., a decrease in heart rate). This variation in the dairy cattle perception of stroking different body regions leads to the question of whether this stroking has an effect on the cattle-human relationship. Different procedures were developed for testing the animal-human relationship with different human cues (Waiblinger et al., 2006). For example, the avoidance of an approaching human and voluntary approach behavior toward a stationary human are 2 measures widely used to assess the animal relationships to humans. Several tests seem necessary for assessing the animal-human relationship because they are all influenced by different emotions and motivations (e.g., fear due to isolation and novelty in an unfamiliar environment or exploratory motivation) apart from the animal-human relationship itself (de Passillé and Rushen, 2005; Waiblinger et al., 2006).

Therefore, the 2 aims were 1) to investigate whether dairy cows show less marked avoidance and more approach behavior when stroked regularly toward an experimenter as compared with cows exposed to simple human presence, and 2) to investigate if the body region stroked affects approach and avoidance behavior. We predict that cows will approach the human more and avoid less when stroked at the ventral side of the neck, an area commonly licked in allogrooming.

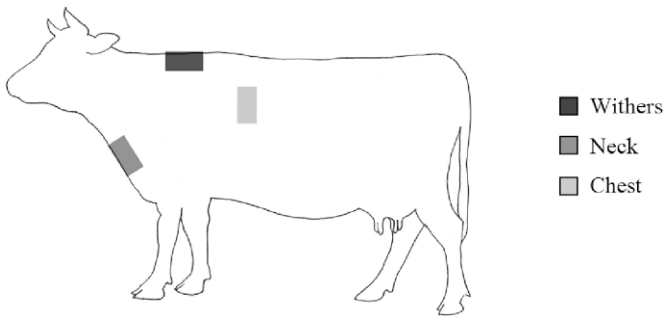

Figure 1. Location of the 3 body regions stroked in 60 dairy cows to test the effects on avoidance and approach behavior toward humans.

MATERIALS AND METHODS

Animals and Housing

The experiment was carried out in February and March 2003 with 30 Brown Swiss and 30 Austrian Simmental lactating cows of the Teaching and Research Estate of the University of Veterinary Medicine Vienna in Lower Austria. The cows were 4.7 ± 1.8 yr (mean ± SD), milk yield was 5,700 ± 1,800 kg/yr, and they averaged 2.6 ± 1.6 lactations. The 60 cows were randomly selected from a herd of 80 cows, excluding dry cows (4 to 6 wk before parturition). All cows were reared under the same housing (loose housing during rearing, tied since first calving) and management conditions. During the experiment the cows were milked twice daily by their regular milk persons. The cows were used to different stock people and to frequent human contact, but they were not used to regular stroking at the 3 body regions used in this experiment. Human contact was limited to necessary management routines during the experiment.

Treatment

The cows were divided into 4 treatment groups balanced for breed, age, state of pregnancy, number of lactations, and tethering position. There were 3 stroking groups and 1 control: in the first stroking group the experimenter (female, 175 cm, and 68 kg, unknown to the animals prior to the experiment) stroked the ventral part of the neck (neck, in Figure 1). The second stroking group was stroked at the withers. These were body regions licked mostly in social licking of cows (Schmied et al., 2005). The third stroking group was stroked at a body region rarely licked during social licking, the lateral side of the chest (chest, Figure 1). The experimenter approached the animals from the back by addressing them gently in a standardized manner ("cow's name" and "good cow"), and then positioned herself by