

Exploring Dairy Cows' Perception of "Positive Treatment" to Determine its Usefulness in Improving the Human-Animal Bond and Animal Welfare

By Jenna Lurie

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Introduction

Previous studies have examined the effects of "positive treatment" (PT) on various welfare indicators in cows. "Positive treatment" is assumed to be pleasant for the animals, but there is much debate as to whether what humans perceive as "positive" is rewarding for cows. Recent studies explored cows' perceptions of PT in the form of human contact, such as stroking, to determine if this is a useful means of improving animal welfare and the human-animal bond (Breuer *et al.*, 2003; Pajor *et al.*, 2003; Bertenshaw & Rowlinson, 2008). Other studies examined whether cows' perceptions of stroking are related to intra-species social grooming and thus change with body region stroked (Schmied *et al.*, 2008a; Schmied *et al.*, 2008b). The following studies explored the benefits of PT on the welfare and production of dairy cattle but the concepts could be applied to beef cattle.

Discussion

Bertenshaw & Rowlinson (2008) studied 37 Holstein/Friesian heifers to determine whether they perceived stroking as pleasurable. The animals were divided into two groups; animals in the treatment group were stroked for 5 minutes a week on the head, neck and shoulders between 6 and 24 months of age while the control group received little human contact during this period. Following the treatment period, the animals' behaviour was assessed with 4 sequential tests. These included flight distance, acceptance of initial PT, pursuit of the retreating experimenter who provided PT, and acceptance of a second round of PT.

Cows in the treatment group showed a significant reduction in flight distance after the initial fear assessment prior to treatment. In contrast, there were no changes in the flight distances of cows in the control group. A greater number of the treated cows remained stationary or voluntarily approached the experimenter. Following treatment, a greater proportion of the treatment group accepted initial PT than the control group, and the majority of cows that pursued the retreating human were from the treatment group. Only 10.5% of cows in the control group accepted the second round of PT compared with 61% of cows in the treatment group. Most of the cows in the treatment group that accepted the second round of PT actively offered their head to the experimenter. In contrast, the control cows showed aversive reactions to stroking (flinching and head shaking). The results indicate that cows are rewarded by stroking because treated animals were more willing to pursue a human to receive additional PT, actively offering their heads rather than passively tolerating stroking (as seen in the control group).

Schmied *et al.* (2008a) aimed to determine whether stroking different body regions affects behaviour and heart rate, and whether this relates to licking patterns observed during social grooming. Sixty dairy cows were divided into three treatment groups and one control group. The treatment groups were stroked on the ventral neck and withers (areas licked most during social grooming) and on the lateral chest (licked rarely). The treatment cows were stroked regularly for three weeks, while the control animals received minimal human contact. The cows were tested before and after the treatment period. In both test sessions, experimenters performed the same stroking procedure on every animal. The cows' behavioural reactions to stroking were videotaped and their heart rates monitored.

During both test sessions, cows stroked on the ventral neck and withers performed neck stretching and ear hanging for longer than those stroked on the chest. Prior to treatment, cows stroked on the withers had higher heart rates than those stroked on the ventral neck and chest. However, after treatment cows stroked on the ventral neck had lower heart rates

than the other treatment cows. The results support the hypothesis that behaviour and heart rate are influenced by the region stroked.

Neck stretching and ear hanging are behaviours observed during social licking (Sambraus, 1969). These behaviours occur most frequently with licking of the ventral neck and withers as compared to less frequently licked areas such as the chest (Schmied *et al.*, 2005). Decreased heart rate during social licking, particularly the ventral neck, indicates that it is calming (Sato & Tarumizu, 1993; Schmied *et al.*, 2005). These behavioural and physiological changes were found during the test sessions, suggesting that cows perceive stroking as analogous to social licking. Social licking strengthens social bonds, reduces tension within the herd and reduces heart rate (Sambraus, 1969; Sato, 1984; Sato & Tarumizu, 1993). Therefore stroking, which imitates this behaviour, may play an important role in improving the human-animal bond (Rushen *et al.*, 1999; Waiblinger *et al.*, 2002).

Schmied *et al.* (2008b) used the same 60 dairy cows from the previous study. They postulated that stroking specific body regions would influence avoidance and approach behaviour toward humans. As in the previous study, they suggested that differences observed would relate to patterns of social licking. Two tests were conducted with the cows in the home tie-stall, including the Approaching Person Test (APT) and the Stationary Person Test (SPT). The third test assessed approach behaviour in a novel arena. Assessment using the APT found that cows stroked on the ventral neck showed less avoidance and tolerated touching of their heads more than those in the chest and control groups. These results suggest that cows attain the greatest pleasure from stroking on those regions licked frequently during social grooming. Stroking the rarely licked lateral chest had very little effect on avoidance and approach behaviour.

In the arena test, the treatment cows approached the experimenter faster than the control cows. There were no significant differences between treatment groups so the hypothesis that behaviour is influenced by the region stroked was not supported in this case. However, testing the cows in a novel arena may have reduced the number of significant results because the aversiveness of the novel environment overshadowed the positive effects of stroking (Boivin *et al.*, 1998). The results indicate that the cows were rewarded by stroking in general because they were motivated to approach the experimenter. These results support those of Bertenshaw & Rowlinson (2008).

Conclusion

Recent studies have found that cows are rewarded by PT in the form of stroking, since they are motivated to pursue a retreating human following treatment. Stroking of the ventral neck and withers mimics intra-specific social licking, which calms the animals and results in reduced avoidance and increased approach behaviour toward humans. Therefore, stroking should be implemented as part of a dairy cattle management plan to improve animal welfare and the human-animal bond. Applying PT to dairy cows has also been shown to improve production and parlour behaviour (Bertenshaw *et al.*, 2008).

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