

# Individual Behavioural Consistency and Personality of Dairy Cows

Roger Müller<sup>1</sup>, Lars Schrader<sup>1,2</sup>

<sup>1</sup>Institute of Animal Sciences, Swiss Federal Institute of Technology ETH, CH-8092 Zurich, <sup>2</sup>Institute for Animal Welfare and Animal Husbandry, Federal Agricultural Research Centre FAL, D-29223 Celle

## Schlüsselwörter

Dairy Cows, individual differences, behavioural consistency, stress reactivity

## Problemstellung und Zielsetzung

Comprehensive knowledge of the individual behavioural in farm animals such as dairy cows (*Bos taurus taurus*) is crucial for several reasons. First, behavioural consistency plays a major role in the daily routine because it may be related to the animal's ability to cope with husbandry conditions and, therefore, is germane to welfare concerns. Second, the consideration of behavioural activities is fundamental to the improvement of animal husbandry.

## Material und Methoden

This thesis focuses on the individuality of dairy cows by surveying the behavioural activity in the home pen by a new monitoring method as well as the reactivity in a challenging test situation. A new automatic monitoring system was validated and applied. Different activity levels could be distinguished and quantified. Furthermore, the long-term consistency of the reactivity towards a social separation test (SST) was investigated. Behavioural and adrenocortical reactivity were examined. The recordings of behavioural activity in the home pen as well as the SST were repeated 4 times during 2 lactations in 35 dairy cows.

## Ergebnisse und Bedeutung

The results are the first quantitative evidence of profound long-term consistency in home pen behavioural activity as well as in the reactivity towards a challenging test situation in dairy cows. This consistency relies on the high repeatability based on the high percentage of total variance explained by the individual. High and low activity counts as well as duration of low activity bouts in the home pen were highly stable within individuals (repeatability = 0.62, 0.40, and 0.49, respectively). Similarly, the individuals' reactivity towards the SST was highly consistent (repeatability of cortisol response, and behavioural reactivities = 0.40, 0.33-0.58, respectively). These high individual consistencies are noteworthy because they were evident across differences in lactation status, parity, and environmental conditions, all of which might have a high impact.

The concept of personality implies consistency of behavioural and physiological responses towards given situations. The high consistency found in this thesis reflects individual traits, which can be attributed to underlying personality structures such as Extraversion and Neuroticism. Personality structures show considerable generality across species, which gives evidence of an ancient, conservative structure in evolution. In answer to some questions about individuality, the results give rise to new questions. A comparative approach of the personality concept could provide opportunities to examine its biological basis as well as its impact on the behaviour and physiology of individuals.

## Publikationen, Poster und Präsentationen (Auswahl)

Müller, R.; Schrader, L. (2005): Individual consistency of dairy cows' activity in their home pen. J. Dairy Sci. 88, 171-175.

Herskin, M.S.; Müller, R.; Schrader, L.; Ladewig, J. (2003): A laser-based method to measure thermal nociception in dairy cows: Short-term repeatability and effects of power output and skin condition. J. Anim. Sci. 81: 945-954.

Müller, R.; Schrader, L. (2003): A new method to measure behavioural activity levels in dairy cows. Appl. Anim. Behav. Sci. 83: 247-258.

## Projekt 2.01.09

**Projektdauer** May 2001 - July 2004