On-farm testing of dairy calves’ avoidance response to human approach: Effects of sex, age and test order

K Ellingsen-Dalskau*, KR Dean† and TRousing‡

† Norwegian Veterinary Institute, PO Box 750, Sentrum, N-0106 Oslo, Norway
† Department of Animal Science, University of Aarhus, PO Box 50, DK-8830 Tjele, Denmark
* Contact for correspondence: Kristian.Ellingsen@vetinst.no

Abstract

Human approach tests are generally accepted as valid measures of the human-animal relationship and hence are widely included in on-farm welfare assessment protocols. Most measures of avoidance response to human approach in production animals have been developed and tested under experimental conditions rather than on commercial farms, thereby making the results less relevant for operational on-farm animal welfare assessment. By contrast, the current study was conducted on calves in their home pens. On 110 Norwegian dairy farms, 548 group-housed calves (aged 22–288 days) were tested individually for their behavioural response to an unfamiliar human approach by a single test person. To conduct the test, the respective calf manager administered concentrates to the manger, followed by the test person who approached each animal in turn in a standardised manner. The avoidance response of the individual calf was categorised as 0 to 5 (maximal to no avoidance) in reaction to an attempted approach and head touch by the test person. The statistical analyses showed that heifer calves were more avoidant compared to bull calves, as were younger bulls compared to older bulls, and that overall avoidance increased in calves that were not tested first.

Keywords: animal welfare, avoidance response, dairy calves, fear, human-animal relationship, human approach test

Introduction

Tests of avoidance response in animals to human approach are generally accepted as valid measures of the human-animal relationship (HAR) (Waiblinger et al. 2006) and are widely included in on-farm welfare assessment protocols (eg Welfare Quality® [Winckler et al. 2009]). The animals’ reactions to humans can result from a number of different emotions, including fear (Waiblinger et al. 2006). Fear and anxiety are undesirable in production animals, and prolonged exposure can have a profound impact on welfare and production (eg Rushen et al. 1999a; Smulders & Algvers 2009). Fear can be transferred across different situations and contexts (Lecors et al. 2018a), making the animals hard to approach and increasing their flight distance (Breuer et al. 2003). Fearful animals can be more difficult and dangerous to handle (Rushen et al. 1999b) and recent research has shown that fearfulness is highly consistent within individual animals over time (Lecors et al. 2018b).

Fear in animals is often tested through response to novelty (neophobia) or response to humans (Meagher et al. 2016). For calves, specifically, most existing human approach test measures have been developed and tested under experimental conditions by the use of test arenas, modification of home pens, fixation or handling scenarios, and the animals are tested either individually or in pairs (de Passillé et al. 1996; Lensink et al. 2003; Leruste et al. 2006). Such tests may be less relevant and less applicable for on-farm measurement as they require the farmer to be present and are costly and arguably time consuming. Moreover, it has been shown that frequency and duration of play behaviour may differ for calves when tested in their home pen compared to a test arena (Mintline et al. 2012), demonstrating that results from test arena testing cannot always be generalised to the home environment. In order to be robust, animal welfare measures must show high inter-observer agreement and test-retest reliability, and clearly be applicable to production-specific conditions, such as group housing, which is now a legal requirement in Europe for calves older than eight weeks (The Council of the European Union 2008). Only a few studies have focused on developing simple and robust measures of group-housed calf behavioural response to human approach for use on-farm (eg Rousing et al. 2005; Leruste et al. 2006). Leruste et al. (2006) focused on larger groups of post-weaned calves, while Rousing et al. (2005) studied smaller groups including milk-fed calves. Leruste et al. (2006) studied four different HAR tests and found varying validity and reliability in the results (detailed argumentation can be found in Leruste et al. 2006). Rousing et al. (2005) developed a simple and quick on-farm test of individual calf behavioural response to an approaching human.