Abstract # 52208

UBC animal welfare program

Pain and Pessimism: dairy calves show negative bias in judgment task following hot-iron disbudding

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Pain can be assessed using behavioral and physiological measures, but what effect does pain have on an animal's emotional state? Here we present the first report of cognitive bias in cattle and the first evidence of bias in response to pain in any species.

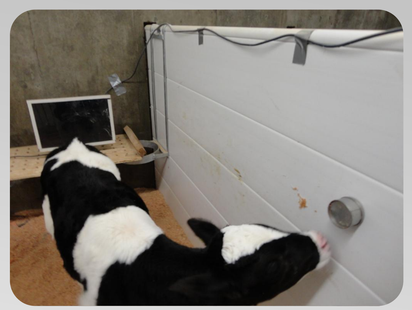
Aim: To assess the emotional state of dairy calves before and after hot-iron disbudding using a cognitive bias task.

Methodology: 8 Holstein dairy calves were trained in a go/no-go task to expect positive or negative events following nose contact with a video screen. Calves were trained and subsequently tested 1 day before and 1 day after hot-iron disbudding.

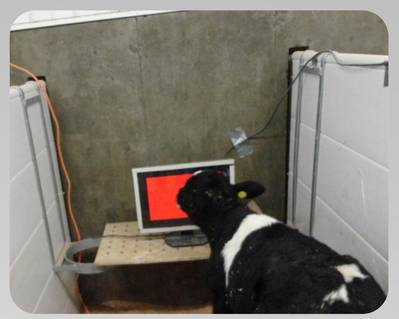
Training:
- Calves were trained with a white or red screen as the positive stimulus (milk reward), and the opposite colour as the negative stimulus (time-out with no milk access)
- Testing began once calves were responding at least 90% correct over 3 consecutive training sessions

Testing:
- Unreinforced ambiguous screen colors (colors between red and white) were introduced randomly within sessions
- Ambiguous screen colours made up 25% of the screens shown in sessions 1 d before and 1 d after hot-iron disbudding

Cognitive Bias Task



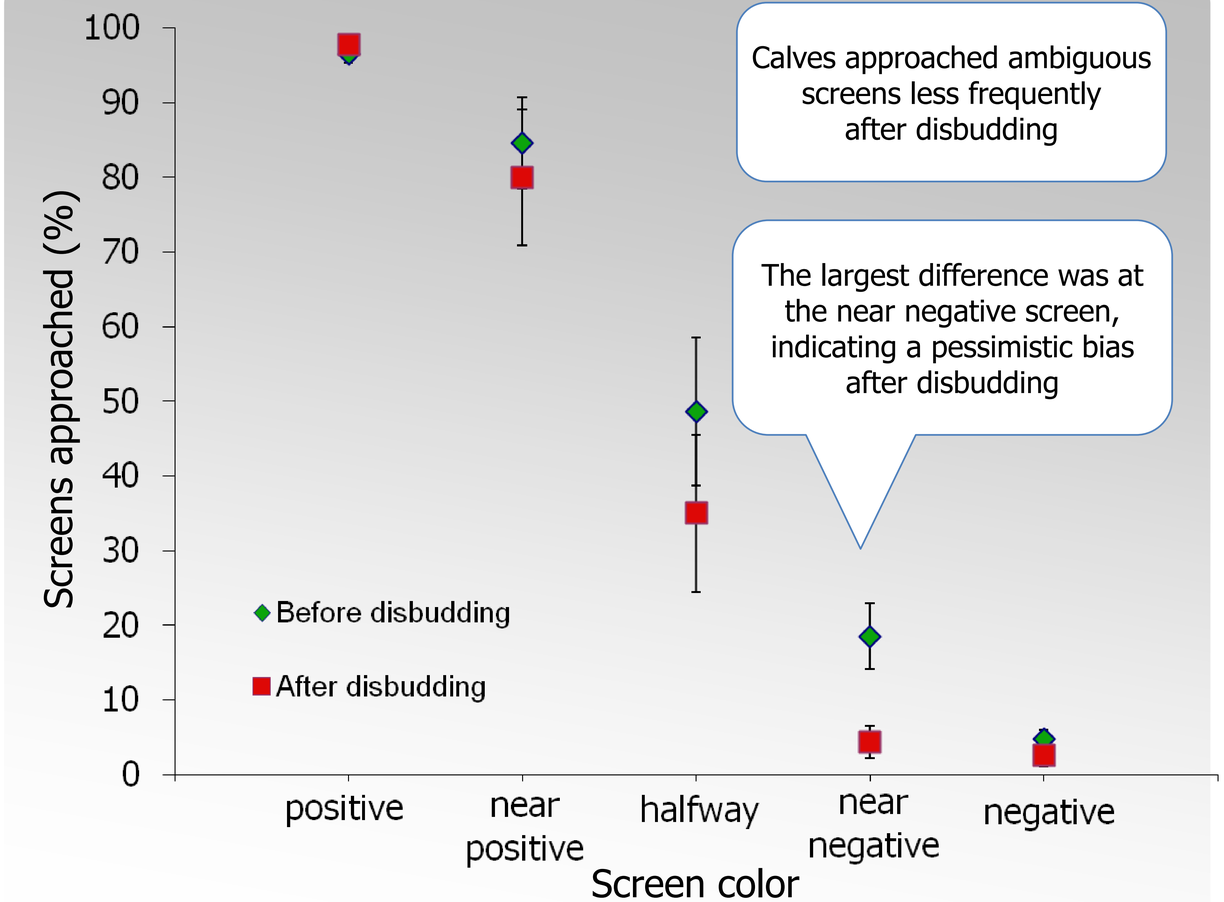
Calf must touch the "startbox" to turn on the video screen. This signals the beginning of a trial.



Calf must decide to approach the screen, or refrain from approaching the screen.

Calf receives milk if he approaches the "positive" screen. No milk is given for "negative" or "ambiguous" screens.

Response Bias Before and After Disbudding



Calves experiencing pain in the hours after disbudding interpret ambiguous stimuli negatively compared to before disbudding. This "pessimistic" bias supports the use of a cognitive bias task as a measure of emotional state, including pain, in dairy calves.

This research was supported by a Discovery Grant from Canada's Natural Sciences and Engineering Research Council.