A stockperson's attitude and behaviour has a significant effect on an animal's fear, welfare and productivity. Professor Hemsworth and his colleague Professor Grahame Coleman from the Animal Welfare Science Centre focus their research on how these attitudes and behaviours affect animal welfare, and subsequently productivity. Capacity, willingness and opportunity all affect a stockperson's work performance, said Prof Hemsworth. Capacity is knowledge and technical skills, whilst willingness is attitudes, motivation and work ethics. Opportunity refers to the opportunity to carry out the task - which is affected by work conditions, co-workers, time available etc.

The concept of human-animal relationships

Human-animal relationships can be assessed by looking at each partner's perception of the other. Frequent and intense interactions between both parties will undoubtedly develop a relationship. So an animal's perception of its relationship with humans can be studied by examining the behavioural and physiological response of the animal to humans. Similarly, the human's perception of this relationship is found by examining the behaviour and attitude of the human towards the animal. Prof Hemsworth said that studies often focus on the animal's fear responses to humans - because of the implications on welfare.

A model of human-animal interactions in livestock industries

Handling studies

A mixture of handling studies and field observations have been carried out, which provide significant insights into human-animal relationships, said Prof Hemsworth. Assessing an animal's relationship with humans is done through a variety of tests. Behavioural tests, such as response to flight distance: response to stationary human, response to moving human, response to actual handling. Physiological tests: such as heart rates and corticosteroid (stress) responses etc. Results have shown a substantial variation in fear responses and stockperson behaviour between farms, said Prof Hemsworth. Human behavior eliciting certain animal responses have been measured as positive or negative. A negative handling behaviour, such as slaps, hits, fast movements, shouting and noise will cause an increase in fear in the animal, resulting in avoidance, stress and handling difficulties. Positive stockperson behaviours, such as pats, strokes, talking, hand resting on the back, slow and deliberate movements will reduce the animal's level of fear of humans and result in animals which are less stressed and are easier to handle. Prof Hemsworth's own studies, as well as more recent and past
studies all show a strong correlation between negative stockperson behaviour and an increase in fear of humans. These effects have been demonstrated in many farm animal species.

Negative Handling: Fear and Stress
Research by Breurer et al in 2003, looked at handling, fear and stress physiology in dairy cows. Dairy cows were exposed to five minutes of handling a day, for five weeks. Some animals in the study were exposed to negative handling, whilst others received positive handling. To measure the cows fear and stress, avoidance of humans (flight distance), acute cortisol response (at five minutes after human exposure) and basal free cortisol concentrations (taken in the morning) were measured. Animals exposed to positive handling had a much shorter flight distance (humans could get much closer to the animal before it withdrew). As well as a shorter flight time, acute cortisol responses were significantly lower, compared animals that had received negative handling. Interestingly, the research showed that negative handling of the dairy animals resulted in higher basal free cortisol concentrations the following morning - suggesting that the animals were significantly affected by the five minutes of negative handling received the day before. A study of cortisol concentrations in gilts by Prof Hemsworth, saw that concentrations of basal plasma cortisol were lower in gilts handled positively, than in gilts handled negatively.

Negative Handling: Animal Productivity
In growing pigs, research has shown that negative and inconsistent handling increases fear responses. One study by Prof Hemsworth looks at growth rates in pigs. His study showed that the growth rate of positively handled pigs was 455 g/day, whereas it was only 404 g/day in pigs negatively handled. The growth rates for inconsistent pigs was 420 g/day. In this situation, the growth rate was reduced due to the animals stress response (cortisol concentrations were elevated in inconsistent and negatively handled pigs), said Prof Hemsworth. A similar study was carried out in laying hens, looking at the effects of negative handling (sudden and unpredictable movements in front of the pens) and positive handling (an extra two minutes spent in front of the cages, and slow deliberate movements). Hen time at the front of the cage was measured, with less time at the front of cage took as avoidance of human contact. Stress responses and egg production were also measured. The results show that positive handling of birds means that the hens were keen to have increased human contact (less fearful), spending more time at the front of the cage. The corticosterone stress levels were much higher in hens handled negatively, than in positively handled hens. Subsequently egg production in the hens was eight per cent higher in hens that had a positive human-animal relationship. The number of studies across species with strong correlations between stress and negative handling, leaves no doubt that negative handling evokes stress, affecting animal welfare and production, said Prof Hemsworth.

Negative handling: Animal Health
As mentioned above, studies have shown that negative handling affects an animal’s fear of humans, leading to stress, which consequently affects health. One study shows that socialised (used to positive human contact, so less fear) birds had higher feed conversion efficiency. In this same study, birds that were less socialised (more fear of humans) had higher lesions and deaths, as well as overall poorer health. Prof Hemsworth says this is due to the response of immune system, suppressing antibodies when an animal is stressed, leading to poor health. A different study, carried out on veal calves, looked at average daily gain and mortality. Fast movements by stockpersons were negatively associated with daily liveweight gain. As well as this, negative behaviour was seen to increase mortality, although unit size was a large variable in this study. Longer flight distances in dairy cattle, also have a positive correlation with lameness in dairy cattle. In a study of 36 dairy heifers, 48 per cent of heifers with a flight distance of 4.8m (to humans) were lame, and on average milk yields were 1.3 kg/day less, than those with a shorter flight distance. To compare, of cows with a flight distance of 2.81m (those that were less fearful), only six per cent showed signs of lameness. On pasture based systems, Prof Hemsworth said that lameness in dairy cows was affected by two significant factors - the condition of farm tracks and farmers’ patience in the dairy, ie. their behaviour towards cows.

Improving human-animal relationships
Changing stockperson attitudes
What is an attitude, asks Prof Hemsworth. It is something that affects our behaviour and although they are stable and resistant, attitudes are learnt. They are shaped through direct and indirect experiences, therefore throughout one’s lifespan, attitudes can be changed. Professor Hemsworth says to change stockperson behaviour, it is important to target attitudes as well.

Cognitive-behavioural training
Evidence from studies carried out by Prof Hemsworth and colleagues suggests that stockperson training can improve animal productivity and welfare. To change the behaviour of stockpeople towards farm animals ultimately requires:
- targeting the beliefs that underlie the behaviour,
- targeting the behaviour in question, and
- then maintaining these changed beliefs and behaviours.

One study looked at the benefits of cognitive-behavioural training on dairy units. The key variables measured were stockperson attitudes, stockperson behaviours, fear of humans and animal productivity. The study demonstrated that training significantly improved stockperson attitudes. Training also halved stockperson negative behaviour towards cattle. Whilst the fear responses of cows didn’t change much, the changes were small but significant, said Prof Hemsworth. Flight distance did not decrease a lot, but milk cortisol levels did often decline. A second study looked at the effects of training on cow productivity at 94 dairy farms. After training, which targeted stockperson attitudes and
behaviour, milk yield per cow increased, as did the protein and fat content of the milk produced.

Stockperson selection

Some studies, by the Animal Welfare Science Centre, have looked at how the selection of a stockperson can improve animal welfare. Measuring stockperson characteristics prior to employment, may give employers an idea of stockperson attitudes and consequently behaviour towards animals. Concluding, Prof Hensworth said that the role of a stockperson in animal welfare and productivity should not be underestimated. The studies in this article are just a few of the many that have been carried out. The outcomes highlight how important the role of the stockperson is in developing positive human animal relationships, and consequently improving animal welfare and productivity.

A Comprehensive Approach to Animal Welfare Science
The Pig Site, December 18, 2011
Harold Gonyou, PhD, Jen Brown, PhD

The different approaches to farm animal welfare are explained by Drs Harold Gonyou and Jen Brown in the latest newsletter from the Prairie Swine Centre in Canada.

Concern for animal welfare is evident at all levels of swine production, from producers and industry to society and consumers, and takes different forms at each level. For the individual producer, it involves daily decisions on the basic care of animals – from feeding and general management, to the quality of health checks and maintaining vaccination protocols.

Within the pork industry, concern for animal welfare takes the form of codes of practice and quality assurance programmes designed to define acceptable industry standards for the care and management of animals. From a societal perspective, concern for animal welfare is shown in laws governing major issues such as humane slaughter and housing practices, as well as in the purchasing choices of individual consumers.

Few consumers know, or are able to select, the farm from which they obtain their food.

Their satisfaction with their food relies on their confidence in the industry which produces it. As such, the importance of animal welfare has increased and with it, the need for producers and the livestock industry to demonstrate good care. The field of animal welfare science arose alongside these changes as a tool to help address questions related to management practices that affect the physical and