

Training to improve stockperson beliefs and behaviour towards livestock enhances welfare and productivity

G.J. Coleman* & P.H. Hemsworth

Animal Welfare Science Centre[#], University of Melbourne, Parkville, Victoria 3010, Australia

* Corresponding author: Grahame.Coleman@unimelb.edu.au

[#] Partner in the OIE Collaborating Centre for Animal Welfare Science and Bioethical Analysis

Summary

The principle that supervising and managing animals affects farm animal welfare is widely recognised within the livestock industries. However, the manner in which the stockperson affects animal welfare, both directly and indirectly, is probably not fully appreciated. Together with the opportunity to perform their tasks well, stockpeople require a range of well-developed husbandry skills and knowledge to effectively care for and manage farm animals. There are three main factors that can be considered to contribute to a stockperson's work performance: capacity, willingness and opportunity. Capacity includes variables such as skills, health, ability and knowledge, while willingness includes motivation, job satisfaction, attitude to the animals and work attitude, and opportunity includes working conditions, actions of co-workers and organisational policies and rules. This paper briefly reviews the influence of the stockperson on livestock welfare and productivity and the opportunities to improve the stockperson's performance through training. It is clear that there is a continuing need for livestock industries to train their personnel to effectively care for and handle their stock. Underestimating the role and impact of the stockperson will seriously risk the welfare and productivity of livestock. Indeed, the stockperson may be the most influential factor affecting animal handling, welfare and productivity. Furthermore, it is likely that, in the near future, both the livestock industries and the general community will place an increasing emphasis on ensuring the competency of stockpeople to manage the welfare of livestock.

Keywords

Animal welfare – Attitudes – Behaviour – Stockpeople – Stress – Training.

Introduction

There is a burgeoning body of evidence that the interactions between animals and the stockpeople who look after them have a substantial effect on the behaviour, welfare and productivity of farm animals (1). Basically, stockperson attitudes towards working with a specific farm species, their beliefs about other people's expectations of them (such as co-workers, spouse, close family or friends, etc.), and their beliefs about the extent to which they have control over their ability to appropriately interact with the animals determine the nature and extent of their interactions with these animals. The theory underlying this is the Theory of Planned Behaviour (2). Further, there is evidence to suggest

that stockperson attitudes and behaviour are related to their work motivation, willingness to learn and job satisfaction (3, 4). This suggests that training for stockpeople should target these variables. Hemsworth and Coleman (1) have summarised the known and predicted relationships amongst these variables (Fig. 1).

It is important to realise that training stockpeople to improve human–animal interactions involves behaviour modification rather than mere skills training. Most of the training that is relevant to livestock farming involves the transfer of new technical knowledge to the farm. Such a transfer may relate to new knowledge about nutrition, housing, husbandry, etc. However, when this new

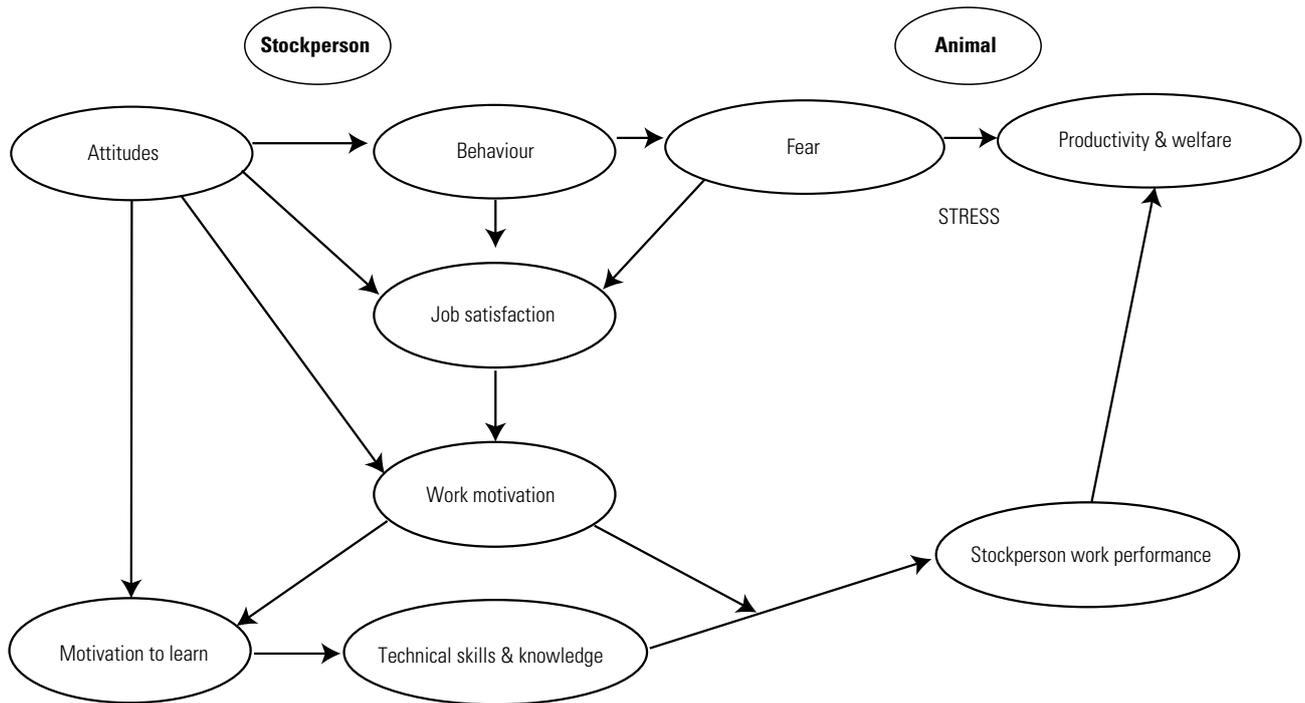


Fig. 1
Important work-related characteristics in the sequential relationship between attitude and welfare (1)

knowledge involves stockpeople learning to behave in different ways, transferring this knowledge requires that they change the beliefs that underpin their behaviour and then change the behaviour itself. This task of changing behaviour is generally a greater challenge than knowledge acquisition.

This paper briefly reviews the influence of the stockperson on livestock welfare and productivity and the opportunities to improve the stockperson's performance through training. Three characteristics contribute to animal welfare and productivity; the stockperson's capacity, willingness and opportunity. An understanding of the impact of these characteristics and the opportunities available for training can be used by livestock industries to improve stockperson performance.

Stockperson characteristics affecting animal welfare and productivity

Many have attempted to define good stockhandling skills. Hemsworth and Coleman (1) developed the following statement of attributes that reflects some key stockpeople characteristics. Stockpeople should have:

- a good general knowledge of the nutritional, climatic, social and health requirements of the farm animal
- practical experience in the care and maintenance of the animal
- the ability to quickly identify any departures in the behaviour, health or performance of the animal from 'the norm' and promptly provide or seek appropriate support to address those departures
- the ability to work effectively, independently and/or in teams, under general supervision, with daily responsibility for the care and maintenance of large numbers of animals.

Indeed, Waiblinger and Spoolder (5) propose that 'stockmanship' summarises the different aspects of taking care of animals, particularly the quality of animal handling, daily care (feeding, cleaning, etc.), health care (e.g. how quickly sick animals are recognised and effectively treated) and management problem-solving (e.g. how well management problems are recognised and effectively solved).

The key characteristics that are important in ensuring that stockpeople demonstrate behaviour that will lead to improved animal welfare and productivity are briefly considered below.

Technical skills and knowledge

Knowing and being skilled at the techniques that must be used to accomplish a task are clearly prerequisites to being able to perform that task. Thus, these job-related characteristics will be limiting factors on job performance in situations where specific technical skills and knowledge are required to carry out the tasks. There are few data demonstrating the impact of these factors within the agricultural industries; however, this basic premise is widely accepted and is contained in the various competencies defined for stockpeople. For example, the Australian National Training Information Service provides nationally recognised units of competency for a specific industry, industry sector or enterprise (www.ntis.gov.au) that lead to the qualifications of Certificates I to IV, a Diploma or an Advanced Diploma.

Attitudes and behaviour

Consistent findings of negative inter-farm correlations between the fear of humans, assessed on the basis of behavioural responses to humans, and the productivity of dairy cattle, pigs and poultry (1) have stimulated research into identifying the behaviours used by stockpeople associated with these fear responses. Coleman *et al.* (3) and Hemsworth *et al.* (6) found that the use of negative tactile behaviours by stockpeople, such as slaps and hits, was positively correlated with the avoidance of humans by breeding sows. In studies on dairy cows kept all year round on pastures, Breuer *et al.* (7) and Hemsworth *et al.* (8) also found that the use of negative tactile interactions, such as slaps, pushes and hits, was positively associated with avoiding humans. Similarly, in a study of dairy cows housed indoors, Waiblinger *et al.* (9, 10) found that the use of negative behaviours, such as forceful slaps, hits and shouting, was positively associated with avoiding humans, whereas the use of positive behaviours, such as touching and talking, was negatively associated with avoiding humans. Lensink *et al.* (11) found that the use of positive behaviours, such as touching, petting and allowing calves to suck the stockperson's fingers, was negatively associated with the avoidance of humans by veal calves. In meat chickens, Hemsworth *et al.* (12) and Cransberg *et al.* (13) found that the speed of movement by the stockperson was positively correlated with avoiding humans. Likewise, Edwards (14) found that the incidence of noise made by stockpeople, such as shouting and cleaning with an air hose or leafblower, was positively associated with the avoidance of humans by caged laying hens, whereas the time that stockpeople spent standing stationary and close to the birds' cages was negatively associated with the avoidance of humans.

A number of field studies on stockperson and animal behaviour have shown that stockpeople's attitudes towards their interactions with their animals are related to their behaviour towards these same animals. Questionnaires have been used to assess the attitudes of stockpeople by examining the stockperson's beliefs about their own behaviour and the behaviour of their animals. In general, positive attitudes among stockpeople to the use of petting and to the avoidance of intense verbal and physical effort to handle the animals were negatively correlated with the use of negative tactile interactions such as slaps, pushes and hits, in both the dairy (7, 8, 9) and pig (3, 6) industries. Lensink *et al.* (15) also found that a belief by stockpeople that calves are sensitive to human contact was positively correlated with the frequency of positive behaviour used by stockpeople towards veal calves, while Edwards (14) found that negative attitudes to the sensitivity of hens to human contact, as well as negative general beliefs about hens, were positively correlated with more noise and faster movements by the stockperson and negatively correlated with less time spent stationary near caged hens.

Stockperson training

There are several approaches that are designed to either reduce stress in farm animals or to modify the way that stockpeople handle animals. For example, Low Stress Stockhandling (LSS) (www.lss.net.au) is a commercial training programme designed to improve the stockperson–animal relationship. The aims of this programme are described in Box 1. The LSS programme appears to

Box 1

Goals of the Low-Stress Stockhandling training programme (www.lss.net.au)

- Foster an environment of low-stress interaction between people and animals
- Impart knowledge that promotes a positive attitude to low-stress stockhandling
- Show people the economic benefits of a low-stress environment
- Meet the need to handle stock in a calm and confident manner in all situations
- Increase productivity and make more money
- Improve the quality of meat from your livestock
- Be more effective with your time and money
- Improve management and profitability
- Reduce production costs
- Have quiet, stress-free stock and people
- Learn to work through ALL situations confidently

incorporate the principles of livestock-handling developed by Bud Williams in the United States under the label of 'low-stress handling methods' (16). It is claimed that low-stress handling lowers animal stress and increases the ease of animal handling (www.stockmanship.com). Although there is little reference in the scientific literature to these training approaches, it appears that they use some sound behavioural principles that have implications for understanding animal stress and ease of handling, such as a consideration of the animal's fear, and exploratory and social behaviour, as well as the animal's sensory and cognitive abilities (17). Grandin (18) contends that calm cattle are easier to handle and sort than agitated, fearful cattle and that the secret to low-stress cattle handling is to keep them calm. However, at present there are no controlled studies that have evaluated the effectiveness of these programmes or similar programmes in improving welfare or productivity outcomes for the animals. Further, LSS does not explicitly address behaviour change by targeting poor habitual stockperson behaviour patterns, nor the effects of peer pressure to conform to traditional handling methods or any other factors that may make the stockperson resistant to change.

Studies in the dairy and pig industries (19, 20, 21) have shown that cognitive-behavioural training, in which the key attitudes and behaviour of stockpeople are targeted, can successfully improve the attitudes and behaviour of stockpeople towards their animals, with consequent beneficial effects on animal fear and productivity.

Cognitive-behavioural techniques basically involve retraining people; first, by targeting both the beliefs that underlie their behaviour (attitude) and the behaviour in question; and secondly, by maintaining these changed beliefs and behaviours (1). This process of inducing behavioural change is a comprehensive procedure in which all of the personal and external factors that are relevant to the behavioural situation are explicitly targeted. This includes addressing commonly perceived barriers to change, addressing defensiveness about previous behaviour, changing habits, and providing follow-up to reinforce changes, as well as changing the relevant attitudes and behaviour.

Therefore, to improve the stockperson's beliefs about their animals, and particularly their beliefs about handling and working with their animals, stockpeople undertaking this cognitive-behavioural training are provided with key information on their livestock. This information includes the ease with which livestock can and should be handled, their sensitivity to the range of negative behaviours used by stockpeople (and their sensitivity to stressors in general), and the adverse effects of these negative behaviours on their fear of humans, which in turn can have negative consequences on their welfare, productivity and ease of handling. The training also gives stockpeople information

on the positive behaviours which they can use to reduce fear in their animals. Furthermore, explicit attention is given to barriers to change, such as pressure to conform from their co-workers and incorrect beliefs about perceived barriers to change, such as poor facilities, poor animal temperament and lack of time. To address the behavioural aspects of the intervention, stockpeople have the opportunity to rehearse the relevant behaviours, either directly or vicariously. When it is not practical to directly handle animals during training, trainers can use video footage of the behaviour of stockpeople in the industry, emphasising those patterns of behaviour that increase the animals' fear of humans. Such video footage can also help stockpeople to recognise and assess fear responses in their animals. In addition, a trainer can assess stockperson responses during training to ensure that defensiveness, misunderstandings and counter-arguments can be addressed. To reinforce the information designed to improve both beliefs and behaviours, stockpeople are given continuing follow-up support in the form of written material, including a booklet, posters and newsletters.

Studies of cognitive behavioural intervention by Hemsworth *et al.* (19, 21) and Coleman *et al.* (20) demonstrate that this approach to training is practical and effective among a wide range of stockpeople working in a variety of situations. Therefore, there is a strong case for introducing this type of training into the livestock industries. The training programme used as an experimental tool during research in the pig industry has been commercialised and is called 'ProHand' ('Professional Handling of Pigs Program', Animal Welfare Science Centre, 2005). A similar training programme has been developed for the dairy industry and, after recent research, programmes for cattle, sheep and pig abattoirs have been developed in Australia. The authors and their European colleagues have also developed training packages for stockpeople in the pig, poultry and cattle industries in Europe (as part of the European Union Sixth Framework Programme for Research and Technological Development) (22). An important characteristic of all of these training programmes is that they are based on scientific research and their effectiveness in improving welfare and productivity has been demonstrated by properly designed intervention studies. Furthermore, because they use a standardised form of presentation, there is a reduced risk that the content will drift over time or that idiosyncratic and possibly unvalidated messages will be conveyed in the training.

Stockpeople clearly require a basic knowledge of both the behaviour of the farm animal and its health and welfare requirements, together with a range of well-developed husbandry and management skills to effectively care for and manage their animals. Therefore, while cognitive-behavioural training which addresses the key attitudes and behaviours among stockpeople that affect animal fear

is important in improving animal welfare, knowledge and skills training are also fundamental in improving the welfare of commercial livestock.

Farm management approaches that maximise stockperson performance are an essential part of farm animal production, yet there is limited relevant research in agriculture and little evidence of the systematic use of these approaches. An understanding of these influential characteristics of stockpeople, as well as the effects of local factors, such as management style and working conditions, is important in developing human resources and organisational policies to ensure that the stockperson is well equipped to effectively care for and manage farm animals. Such policies would include employee selection and training that target these stockperson characteristics, as well as a working environment that reduces employees' levels of stress, enhances a positive group culture towards the animal and animal management tasks, and provides jobs that involve a variety of skills, meaningful tasks, autonomy and feedback. Furthermore, welfare audits that include stockperson performance provide a mechanism for delivering feedback to stockpeople, management and the wider community. ■

Conclusion

There is a clear, continuing need for the livestock industries to train their personnel to effectively care for and handle their stock. The role and impact of the stockperson should not be underestimated: to do so seriously risks the welfare and productivity of livestock. Indeed, it is possible that the stockperson may be the most influential factor affecting animal handling, welfare and productivity (1). Furthermore, it is likely that, in the near future, both the livestock industries and the general community will place an increasing emphasis on ensuring the competency of stockpeople to manage their livestock's welfare (1). While welfare monitoring schemes are likely to improve animal welfare, the impact of such schemes will only be realised by recognising the limitations of stockpeople, monitoring 'stockmanship' and providing specific stockperson training to target key aspects of stockmanship (23).

Former les techniciens d'élevage pour ancrer des croyances et des comportements qui améliorent le bien-être animal et la productivité des élevages

G.J. Coleman & P.H. Hemsworth

Résumé

L'impact des opérations de surveillance et de gestion des animaux d'élevage sur leur bien-être est largement reconnu dans ce secteur. Néanmoins, les effets sur le bien-être animal imputables directement ou indirectement aux techniciens d'élevage sont encore mal appréhendés. En plus de travailler dans des conditions leur permettant d'exécuter leurs tâches correctement, les techniciens d'élevage doivent être dotés de compétences et de connaissances solides afin de s'occuper efficacement des animaux et de leur prodiguer les soins nécessaires. Trois types principaux de facteurs contribuent à cette efficacité, qui ont trait, respectivement, aux capacités et à la bonne volonté des personnels d'élevage, ainsi qu'aux possibilités dont ils disposent. Les capacités désignent plusieurs variables telles que les compétences, la santé, l'aptitude et les connaissances; la bonne volonté regroupe la motivation, la satisfaction au travail et l'attitude vis-à-vis des animaux et du travail; quant aux possibilités, elles concernent les conditions de travail, les interactions avec les collègues et les stratégies et règlements de l'entreprise. Les auteurs examinent brièvement l'influence exercée par les techniciens d'élevage sur le bien-être et la productivité des animaux ainsi que les possibilités d'améliorer les performances de ces personnels au moyen de formations. Il apparaît clairement que le secteur de l'élevage doit prévoir de

former en permanence ces personnels afin d'assurer la qualité des opérations et des soins prodigués au bétail. Une sous-estimation du rôle et de l'importance des techniciens d'élevage compromet sérieusement le bien-être et la productivité des cheptels. Le personnel d'élevage constitue sans aucun doute le facteur ayant le plus d'influence sur la qualité des opérations d'élevage, le bien-être animal et la productivité des animaux. On peut s'attendre à ce que le secteur de l'élevage et la société tout entière accordent une attention croissante aux compétences de ces personnels en matière de gestion du bien-être animal.

Mots-clés

Attitude – Bien-être animal – Comportement – Formation – Stress – Technicien d'élevage.



La formación para mejorar las ideas y conductas de los cuidadores del ganado con respecto a sus animales acrecienta los niveles de bienestar y productividad

G.J. Coleman & P.H. Hemsworth

Resumen

La industria ganadera tiene ya perfectamente integrado el principio de que supervisar y gestionar a los animales de granja afecta a su bienestar. En cambio, seguramente aún no se entiende del todo la forma en que el quehacer del cuidador influye en el bienestar del animal, tanto directa como indirectamente. Junto con la posibilidad de realizar correctamente su trabajo, los cuidadores necesitan un conjunto de sólidas competencias y conocimientos zootécnicos para cuidar bien de los animales de granja y manejarlos eficazmente. Para contribuir al buen desempeño de este trabajo se pueden tener en cuenta tres tipos de factores, que se resumen en capacidad, voluntad y oportunidad. «Capacidad» incluye variables como las competencias, la salud, la aptitud y el conocimiento. El término «voluntad» abarca la motivación, la satisfacción en el empleo y la actitud respecto de los animales y del propio trabajo. Y «oportunidad» remite a las condiciones laborales, la actividad de los colegas y las políticas y normas organizativas. Los autores examinan brevemente la influencia del cuidador sobre el bienestar y la productividad del ganado, así como las posibilidades de mejorar el desempeño de los cuidadores por medio de la formación. Está claro que la industria ganadera necesita continuamente impartir formación a su personal para que sepa cuidar de los animales y manejarlos eficazmente. El hecho de subestimar la función e influencia del cuidador equivale a poner en serio peligro el bienestar y la productividad del ganado. De hecho, el cuidador es quizá el factor que mayor influencia tiene sobre las operaciones de cría, el bienestar y la productividad de los animales. Es probable, además, que en los próximos años la industria ganadera y la opinión pública en general otorguen cada vez más importancia al hecho de que los cuidadores sean competentes para gestionar el bienestar de los rebaños.

Palabras clave

Actitud – Bienestar animal – Comportamiento – Cuidadores del ganado – Estrés – Formación.



References

1. Hemsworth P.H. & Coleman G.J. (2011). – Human–livestock interactions: the stockperson and the productivity and welfare of intensively-farmed animals, 2nd Ed. CABI, Oxford.
2. Ajzen I. & Fishbein M. (1980). – Understanding attitudes and predicting social behaviour. Prentice-Hall Inc., Eaglewood Cliffs, New Jersey.
3. Coleman G.J., Hemsworth P.H., Hay M. & Cox M. (1998). – Predicting stockperson behaviour towards pigs from attitudinal and job-related variables and empathy. *Appl. anim. Behav. Sci.*, **58**, 63–75.
4. Carless S.A., Fewings-Hall S., Hall M., Hay M., Hemsworth P. & Coleman G.J. (2007). – Selecting unskilled and semi-skilled blue-collar workers: the criterion-related validity of the PDI-employment inventory. *Int. J. Select. Assess.*, **15**, 335–340.
5. Waiblinger S. & Spoolder H.A.M. (2007). – Quality of stockpersonship. In *On farm monitoring of pig welfare* (A. Verlarde & R. Geers, eds). Wageningen Academic Press, Wageningen, the Netherlands, 211–236.
6. Hemsworth P.H., Barnett J.L., Coleman G.J. & Hansen C. (1989). – A study of the relationships between the attitudinal and behavioural profiles of stockpersons and the level of fear of humans and reproductive performance of commercial pigs. *Appl. anim. Behav. Sci.*, **23**, 301–314.
7. Breuer K., Hemsworth P.H., Barnett J.L., Matthews L.R. & Coleman G.J. (2000). – Behavioural response to humans and the productivity of commercial dairy cows. *Appl. anim. Behav. Sci.*, **66**, 273–288.
8. Hemsworth P.H., Coleman G.J., Barnett J.L. & Borg S. (2000). – Relationships between human–animal interactions and productivity of commercial dairy cows. *J. Anim. Sci.*, **78**, 2821–2831.
9. Waiblinger S., Menke C. & Coleman G. (2002). – The relationship between attitudes, personal characteristics and behaviour of stockpeople and subsequent behaviour and production of dairy cows. *Appl. anim. Behav. Sci.*, **79**, 195–219.
10. Waiblinger S., Menke C. & Fölsch D.W. (2003). – Influences on the avoidance and approach behaviour of dairy cows towards humans on 35 farms. *Appl. anim. Behav. Sci.*, **84**, 23–39.
11. Lensink B.J., Veissier I. & Florland L. (2001). – The farmers' influence on calves' behaviour, health and production of a veal unit. *Anim. Sci.*, **72**, 105–116.
12. Hemsworth P.H., Coleman G.J., Barnett J.L. & Jones R.B. (1994). – Fear of humans and the productivity of commercial broiler chickens. *Appl. anim. Behav. Sci.*, **41**, 101–114.
13. Cransberg P.H., Hemsworth P.H. & Coleman G.J. (2000). – Human factors affecting the behaviour and productivity of commercial broiler chickens. *Br. Poult. Sci.*, **41**, 272–279.
14. Edwards L.E. (2009). – The human–animal relationship in the laying hen. PhD thesis submitted to the University of Melbourne, Australia.
15. Lensink B.J., Boissy A. & Veissier I. (2000). – The relationship between farmers' attitude and behaviour towards calves, and productivity of veal units. *Ann. Zootech.*, **49**, 313–327.
16. Cote S. (2004). – Stockmanship. A powerful tool for grazing lands management. Natural Resources Conservation Service/Butte Soil and Water Conservation District, Arco, Idaho.
17. Hemsworth P.H., Barnett J.L., Rickard M. & Coleman G.J. (2007). – Australia's research and development capacity in animal welfare. *Farm Policy J.*, **4**, 23–31.
18. Grandin T. (2007). – Behavioural principles of handling cattle and other grazing animals under extensive conditions. In *Livestock handling and transport* (T. Grandin, ed.), 3rd Ed. CABI, Wallingford, Oxfordshire, 44–64.
19. Hemsworth P.H., Coleman G.J. & Barnett J.L. (1994). – Improving the attitude and behaviour of stockpersons towards pigs and the consequences on the behaviour and reproductive performance of commercial pigs. *Appl. anim. Behav. Sci.*, **39**, 349–362.
20. Coleman G.J., Hemsworth P.H., Hay M. & Cox M. (2000). – Modifying stockperson attitudes and behaviour towards pigs at a large commercial farm. *Appl. anim. Behav. Sci.*, **66**, 11–20.
21. Hemsworth P.H., Coleman G.J., Barnett J.L., Borg S. & Dowling S. (2002). – The effects of cognitive behavioral intervention on the attitude and behavior of stockpersons and the behavior and productivity of commercial dairy cows. *J. Anim. Sci.*, **80** (1), 68–78.
22. Ruis M., Coleman G.J., Waiblinger S., Windschnurer I. & Boivin X. (2010). – A multimedia-based cognitive-behavioural intervention program improves attitudes and handling behaviours of stockpeople in livestock farming. *Adv. Anim. Biosci.*, **1** (1), 175.
23. Hemsworth P.H., Barnett J.L. & Coleman G.J. (2009). – The integration of human–animal relations into animal welfare monitoring schemes. *Anim. Welf.*, **18**, 335–345.

