



Review Article

## Examining the Attitudes of Livestock Keepers within Animal Production Systems

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### Abstract

It has been proven that the interactions or relationships established between humans and animals in livestock production significantly affect both. Therefore, it is extremely important that the quality of these interactions be positive and reflect a genuine sense of caring on the part of the people who deal directly with the animals. This study draws on some of the most important publications on the subject from 1986 to 2022 found in article databases; presents the main concepts used to understand the subject; lists the main reasons for what can be considered mistreatment of animals in animal husbandry (negative behaviours); and proposes solutions based on the literature and the author's experience. The purpose of this article is to help a) shift the paradigm and prioritise the definition of a personal profile that should work with animals, rather than focusing exclusively on the technical training of animal caregivers or on the common definition of “stockperson”; b) propose an analytical solution that can be applied during the recruitment process; and c) serve as a basis for the most relevant literature on the subject, given the already large number of publications, and d) encourage mutual reflection.

*Keywords:* Attitudes; Human-Animal Interactions; Handling; Stockmanship.

## 1. Introduction

There is now a large body of scientific literature examining the influence of human attitudes on the welfare of various animals, including those used for food production [1, 2]. It has also been shown that there is a direct relationship between the welfare of animals and farm workers and their well-being [3]. This relationship is mediated by the quality of interactions between the two. However, it is more important to understand and control human attitudes in order to change them to reduce animal stress, increase farm productivity, and improve the well-being of farm workers [4, 5].

The goal is to provide an overview of the origins of the negative treatment of animal workers in animal production systems, recall solutions found in the literature, and propose ideas reflected by the author; to serve as a basis for the most relevant literature published on the subject, and to change the paradigm of hiring based on the absence of a profile focused on direct observation by the recruiter, and to prioritise the definition of a personal profile based on values that should be considered when working with animals, measured with an analytical tool. This work is divided into three parts: first, the article is contextualized with the works of the main authors on the subject; second, the main concepts related to the theme are described and finally, there is a final discussion of the causes affecting the quality of interaction between humans and animals, in which I present some new solutions to improve them. Despite the numerous papers already published on the subject, only those that were read and used were cited in the article.

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## 2. Research Methodology

The article followed on from a presentation, held by the author, at the 73rd European Federation of Animal Science Annual Meeting in Porto, Portugal, 2022, called the role of human-animal interactions in farm animal welfare. This presentation grew out of a project written as part of a postgraduate course in which I sought to deepen understanding of the attitudes of livestock workers in order to improve them. This was because I observed animal caretakers and technicians treating animals poorly on swine farms. Although I tried as a professional and as a human being to bring their actions to their attention, I felt that I could not change anything. When I took a year off from the course, I researched more about the topic, specifically anthrozoology, animal welfare, and ethics. I gave the presentation and wanted to publish the results in an article to expose them and thus help improve the treatment of animals.

This is a review of the major literature published in the area of human-animal interactions and human-animal relationships in animal production systems. The research focused on the swine species, consistent with my experience as the sole author of the study, but it is overarching for production systems of other livestock species. The discussion is a mixture of data obtained through literature review and the professional reflections of the author of the study, who worked as a livestock farmer in intensive pig farming in Portugal. The article is composed of a theoretical framework and a practical framework.

The theoretical search was performed using Google (specifically open-access articles), Web of Science, and PubMed. The time interval of the documents ranged from 1986 until 2022. The keywords used were "human-animal interaction," "human-animal relationships," "stockmanship" and "handling". To reduce the scope of this search, specific keywords like "horse", "cow", "goat", and "poultry" were used. However, the primary focus was on "pigs" or "swine" to meet my broader professional experience and where I observed more negative behaviours.

The practical framework composed of the results and the discussion, was created through the analysis and the reading of the articles obtained during the research, as well as through the personal reflection and the professional experience of the author.

## 3. State of the Art

The earliest publication I found was a book chapter published in 1986 by Jack Albright, Human/Farm Animal Relationships [6]. In it, two authors are cited who I later found had developed work in this area: Temple Grandin & Paul Hemsworth. Of the former, I would like to highlight two articles published in 1989 and 2000, respectively: Behavioral Principles of Livestock Handling [7] and Human-cow Interactions: production effects [8]. In the first, she emphasizes the knowledge of animal behaviour in order to handle them more easily and explains some techniques; in the second, she explains why the fear of dairy cows reduces farm productivity. She emphasizes the need for gentle handling.

Paul Hemsworth was the author with most publications developed in the area. The most relevant were Ethical Stockmanship, an article from 2007, which underlines the importance of the ethical treatment of animals to the care of humans by the animal handler and advocates the need for technical training [9]; Managing Poultry: Human–Bird Interactions and Their Implications, from 2010 [10], and a book of 2011, Human-Livestock interactions, Second Edition - The Stockperson and the Productivity and Welfare of Intensively Farmed Animals [4]. James Serpell also published a book named In the Company of Animals - A Study of Human-Animal Relationships, in 1996 [11], about the relationships we establish with animals, he published with E. Paul, in 2018, another article - Childhood Pet Keeping and Humane Attitudes in Young Adulthood [12].

Another notable researcher is Harold Herzog who, in 1997, published, with Mathews, Personality and Attitudes toward the Treatment of Animals [13]. In 2002, he published Ethical Aspects of Relationships Between Humans and Research Animals [14], where he focuses on the technicians' attachment to the animals used for research; in 2007, Gender Differences in Human–Animal Interactions: A Review [15], where he claims that females are more prone to positive attitudes than males, who have higher levels of negative behaviour, and that research into gender roles in human-animal relationships is harmed by omission in reports. Variability in Human-Animal Interaction Research was published in 2021 [16] in co-authorship and focuses on Human-Animal interaction with companion animals and its use in assisted therapy.

Boivin et al. developed his work on animal welfare and human interaction. Together with Braastad, he published the 1996 study Effects of Handling during temporary isolation after early weaning on goat kids' later response to humans [17]. Stockmanship & Farm Animal Welfare (2003) is an excellent article noting that factors such as attitude, personality traits, self-esteem, and job satisfaction influence the way people interact with animals. This underscores the importance of ethical treatment and highlights the need for positive treatment of animals [18]. He is a co-author of the study Effects of handling at weaning on manageability and reactivity of foals [19], which examined whether age after weaning is a good factor that can facilitate handling of foals. They concluded that weaning facilitates manageability and that foals are easier to handle and less reactive in long-term therapy. "Quality Handling" a training program to reduce anxiety and

stress in farm animals, from 2011, with Ruis [20]. He describes a tool to improve the quality of interaction with animals (pigs, laying hens, and cattle) in companies that has proven effective, and is the lead author of the 2012 review *Hommes et animaux d'élevage au travail: vers une approche pluridisciplinaire des pratiques relationnelles*, which looks at animal husbandry practices from ethological and social science perspectives to understand and improve them [21].

In 2006 was published *Assessing the human–animal relationship in farmed species: A critical review*, which explained the importance of understanding the relationship between humans and animals [22] and *Stakeholder attitudes toward farm animal welfare* [23]. Within this specific segment that focuses on the importance of the quality of animal management, in 2010, it was published *The Importance of good stockmanship and its benefits to animals* [24] consists of an exhaustive review on the subject, where stands out that animals can distinguish between handlers individually.

In 2013, a review was published on human-animal interactions and their impact on animal productivity and welfare, which found that human attitudes and behaviours can induce fear in animals and affect animal welfare and productivity. In addition, technical skills, knowledge, work motivation, commitment, and job satisfaction are prerequisites for high work performance [25]. In 2014, the *Development and Human-Animal Interaction* was published [26]. In 2015, the study called *The Relationship between Types of Human–Animal Interaction and Attitudes about Animals: An Exploratory Study* [27], which also aimed to understand some factors that influenced attitudes towards animals, was published. In 2019, *Invited review: Examining farmers' personalities and attitudes as possible risk factors for dairy cattle health, welfare, productivity, and farm management: A systematic scoping review* [28]. A systematic review of studies on personality and attitude as risk factors for dairy cattle health, welfare, productivity, and farm management. Database searches captured 1,144 records.

In 2020 was published *Comunicação emocional entre o homem e o animal não humano* [29], a literature review on emotional communication between human and nonhuman animals, *The Power of a Positive Human–Animal Relationship for Animal Welfare* [5]; *Effects of Long-Term Gentle Handling on Behavioral Responses, Production Performance, and Meat Quality of Pigs* [30]; *Farmers' representations of the effects of precision livestock farming on the human-animal relationship* [31]; *The human–animal relationship in dairy animals* [32], and *Stockpeople and Animal Welfare: Compatibilities, Contradictions, and Unresolved Ethical Dilemmas* [33].

In 2021, an article was published that focused on positive management: *Positive Human Contact and Housing Systems Impact the Responses of Piglets to Various Stressors* [34]; *The Ethics of Touch and the Importance of Nonhuman Relationships in Animal Agriculture* [35]; *Researching Human-Cattle Interaction on Rangelands: Challenges and Potential Solutions* [36]; *Human–animal relationship influences husbandry practices, animal welfare and productivity in pig farming* [37]; *Costs and Benefits of Improving Farm Animal Welfare* [38]; and *Human-animal relations in business and society: Advancing the feminist interpretation of stakeholder theory* [39]. Also in 2021, three important lectures occurred during the writing of this article: two in Brazil, whose authors were França [40] and Néstor [41] and one in Portugal, by Ceballos [42].

In 2022, the *Impact of Procedures and Human-Animal Interactions during Transport and Slaughter on Animal Welfare of Pigs: A Systematic Literature Review* [40], and *Humans and Goats: Improving Knowledge for a Better Relationship* [44] was the main articles that I point out. *Development of human-directed behavior in dairy calves reared individually or in pairs* [45] showed that social housing of dairy calves influence development of human-directed behaviour. *Human-animal interactions during on-farm truck loading of finishing pigs for slaughter transport conclude that training is the best way to change swine behaviour in transport* [46]. Three other important articles were published: *Human–Animal Interactions and the Promotion of Social and Emotional Competencies: A Scoping Review* which addresses human-animal interactions for children and adolescents [47]; *The Animal-Human Interface in Farm Animal Production: Animal Fear, Stress, Reproduction and Welfare* by Acharya (also with Coleman and Hemsworth), which focuses on the consequences that negative worker behavior has on animal reproduction and reminds us of the importance of technical training for workers [48]; and *Exploring the Effects of the Human-Animal Relationship on Care Farms in the Context of Trauma Histories* [49], which focuses on care farms and concludes that animals with trauma histories can help people who also have traumatic histories. The article is a good reminder that “therapy animals” have their own life histories. It

I found also some interesting articles written by French zootechnician and sociologist Porcher, who told her story while working in pig farms. The first article, from 2004, addresses the suffering of humans and animals in this context [50]; the second, from 2011, is along the same lines [51]. In 2012, she published *Zootecnia*, describing animal farming in France [52]. In *The Ethics of Animal Labour - A Collaborative Utopia*, published in 2017, a chapter of the same name addresses the use of animals for labour [53].

This work was developed to offer new and practical suggestions for thinking about and correcting negative attitudes toward animals in this literary context.

## 4. Human-Animal Interaction (HAI) and Human-Animal Relationship (HAR)

### 4.1. Companion and Production Animals

The way humans interact with animals is highly dependent on how animals are perceived, especially the purpose of those animals' lives. In a review published in 2014, the authors analysed 329 papers published in the last twenty years in the field of Human-Animal Interaction (HAI), Human-Animal Relationship (HAR), and Human-Animal Bond (HAB). They noted that the terminology used by researchers in these contexts varies widely. They point out that this terminology influences our perceptions of animals as partners in a relationship, the motivations for their behaviour, and moral judgments of how humans treat them, but I would add that the attitudes we display also have a major impact on how we (humans) describe the nature of interactions with them. While researchers use the term "attachment" or "bond" in the literature examining HAI with companion animals, the "agricultural literature (focusing on farm animals) uses the term "relationship" or "interaction". The former literature tends to focus on the importance of the animal for therapy or even the benefits of owning a pet, while literature focusing on the use of animals for food, sport, or leather production focuses on the importance of the interaction or relationship with humans for animal welfare.

Regarding the results of the study, the authors stated that HAI, HAR, and HAB research cannot be considered as a unified field because there are several theories, methods, and research perspectives. They suggest standardisation of terms, more empirical research with companion animals, more research on the form and frequency of interactions between humans and farm animals, and more attention to the "affective dimensions" of animal people and, in particular, more research on zoo and laboratory animals. Much more research is needed on how animals are viewed.

In agricultural species, they found that care and gentle treatment, especially when given by a trusted person, promoted welfare, while rough treatment detracted from welfare.

They noted that several authors identified the need for "more consistent use of terminology," "more rigorous research", "a better understanding of the mechanism behind bonding," and "ways to use HAIs as enrichment for laboratory animals" (Jeremy Marchant in Pig Welfare Americas, 2022, referred to "human enrichment" to this type of human-animal interaction); "more research on animal fear, owner attitudes, and affirmative action for animal welfare in zoos" and they add that "studies are needed across a broad range of species and studies are needed on the effects of HAI/HAR/HAB on both humans and animals" [54]. It would be interesting to repeat this systematic review to compare with current results.

### 4.2. Relations and Interactions

'Relationships' or 'interactions' can be established between humans and animals. A relationship implies a series of interactions between the participants, with the direction determined by both. It may be of short duration but is characterized by its reciprocal nature [55]. The interaction may be of long duration but is essentially characterized by a lack of reciprocity. Only one actor has actively participated, but influence has been exerted on the other.

### 4.3. Influencing Factors

The quality of interactions or relationships with animals may be affected by the individual, the animal, and the context.

As far as the individual is concerned, several causes are listed in the literature such as: gender - it is proven that women are more empathetic than men [56]; culture - authors such as Losada-Espinosa et al. [33] state that conditions as ethnicity, educational backgrounds, health condition, culture, generational differences and occupational roles condition the quality of attitudes to animals on farms; technical training – "capacity" is the junction of technical skills and knowledge that Hemsworth, adapting from Blumberg and Pringle (1982), considers one of the types that contribute to a good work performance of farm [57]; empathy – together with "attachment" and "anthromorphism" is considered by some authors to be one of the determining factors in human-animal relationships [58]; pleasure in doing their job - the working conditions and motivation of the workers will affect their performance with the animals [57]; love for animals [59] - a study published in 2018 linked the type of love existing between partners with the type of attitudes towards their pets. It was found that erotic love is linked to positive attitudes, while a playful type of love is related to negative attitudes; and having had contact with animals as a child – E. Paul found out in a study, from 2000, that past and present pet owning was associated with higher levels of animal-oriented empathy but, very interestingly, not human-oriented empathy [60].

For animals, three characteristics are suggested: genetics, i.e., the degree of meekness of the animal, since the meekest animal is always selected for breeding; contact with humans from birth; and constant exposure [61]. These three factors make it easier to approach and build relationships with animals.

In addition to factors related to the animal, contextual factors also affect the relationship between humans and animals. For farm animals, these may include institutional values, work environment, facilities, job satisfaction, and worker motivation. Animal welfare also directly affects worker welfare and enjoyment of work [13].

Pol et al. (2021) conducted a study where they verify that farmers with more confident pigs and better productivity on farms where those for whom the animals were central to their profession, showed more pleasure to work and feel empathy for them [37]. It can be confirmed that the well-being of both (animals and humans), within a work-life context, is interconnected.

## 5. Handling in Animal Production – Results and Discussion

Based on the premise that animal worker welfare and animal welfare are interrelated and that I have observed some negative behaviours in swine operations for which there were no solutions in the literature, a framework of possible causes of negative behaviours in direct animal work was established. Although these are factors that have been observed in swine operations, they are cross-cutting for any type of animal production. The purpose of this compilation is to provide some others for discussion and to stimulate thought about practical solutions.

Buxadé & López Montes (2005) [62] suggested that four factors explain negative attitudes in swine production: lack of sensitivity, lack of knowledge, incompetence, and inexperience. Complementing the literature, I propose several solutions based on my experience in animal production. According to my observations, several reasons stand out:

- Lack of sensitivity – there is a lack of sensitivity when a person who does not treat animals carefully with animals and does not understand their needs. If there is no real effort to care about animals, this profile is unsuitable for dealing with them.
- Lack of knowledge: This is a lack of theoretical or practical training, and the proposed solutions are to hire trained personnel or to promote training with the appropriate update.
- Incompetence – This is a lack of knowledge due to inexperience or obsolescence. Solutions include hiring qualified personnel and promoting refresher courses practical nature, as well as encouraging the sharing of skills among employees and teamwork.
- Inexperience – a person does not know how to do it temporarily; the only solution is learning and practicing.

Néstor (2021) [41] states that many bad attitudes towards animals are the result of emotional problems or mental illness:

- Emotional imbalances/Psychological disorders – behavioral/psychological disorders that can lead to increased aggression or cruelty in animals. Depending on the problem, specialized medical treatment may be suggested. If the employee is in a position that involves contact with animals and this aspect is reviewed, it is advisable to transfer him/her to a position that better fits his/her profile. When hiring, it should be considered that direct contact with animals is unsuitable.
- Individual characteristics – sometimes people have no interest in or respect for animals, have had early negative experiences with animals, and may lack sensitivity and empathy toward them.

Individuals with such attitudes toward animals may need some kind of psychological support or even training, but it may be more appropriate in a work context to place them in positions where they are not directly involved with animals.

- Resistance to change: It is an inability to learn, characterised essentially by a refusal to want to learn new things. It may arise from distrust.

This resistance to maintaining the status quo in the workplace is normal, especially when people have worked for many years without major changes. However, it is important that management values individuals, that the team works together, and that employees are made aware of the value of new knowledge and techniques. If possible, create a mixed team with employees from multiple generations.

- “*Being Human*” - humans as a species have characteristics that distinguish them from other non-human animals. Discussion of this topic is not the aim of this article, but there are current situations in everyday work that consist of bad days, negative emotions, needs (described by Maslow (1954); [63]) that condition personal behaviour, etc., that affect the way humans interact with the world. The proposed solution is to promote the conscience of the individual (in relation to his feelings, to others, and to the influence of his attitude on others). For example, if you observe a worker beating a sow to make it run, try asking the person, "Why are you doing this?", "Do not you see the fear you are causing the animal?". The point is to confront the person about their actions or show them the consequences of their actions.

Another suggestion is to work on emotional intelligence. In this aspect, one must also keep in mind that there are people who, despite psychological or psychiatric work, will not have developed emotional intelligence simply because they are like that (e.g., borderline people, low Emotional Quotient people). They may be able to handle animals, but low emotional intelligence does not make them unsuitable for this kind of work

Some qualities of people that cannot be controlled, such as compassion, sensitivity, empathy, and moral consideration - a “good” person is a good stockman or stockwoman. I suggest developing an instrument similar to a psychotechnical test as one of the steps in hiring an employee (who deals directly with animals) that includes four scales: a values scale, a personality scale, an empathy scale, and the original or adapted Animal Attitude Scale (see Herzog et al. (2015) [64]). It would be appropriate to develop a programme that combines all scales and could be used in recruitment, e.g., for a swine handler position.

- Corporate values: companies with outdated handling techniques, poor and conflicting work environments, and/or lack of transparency. Solutions include making companies aware of studies that show the impact of company values on the quality of animal husbandry, using existing studies to develop animal handling skills, encouraging companies to monitor compliance with laws, ensuring that employees know their rights and responsibilities, ensuring a good working environment and conditions, and paying attention to health and safety in the workplace.

It is well known that there is a big difference between purely academic research and the practical application of techniques in practise. One and the other are often separated. It will be important to re-examine the profile characteristics of people working in animal facilities and compare them to the theoretical definition of the ideal profile. It will be important to understand what factors condition this option and to work with companies and governments at the management level to ensure that companies have appropriate working conditions.

## 6. Conclusion

Instead of focusing on technical training and soft or hard skills, the profile of the person directly involved with the animals should be the main focus. Within a work context, there are few factors that the company can control; the profile of the workers is one of them. Both individual and corporate responsibility must be encouraged. Not only by promoting prizes in the workplace but also by approaching people. A good working environment (with all the factors that influence it, such as teamwork, logistics, installations, and good leadership) is the prerequisite for good work. Technical training can preferably be provided by professional institutions or companies themselves. Although this involves costs and is not always possible to keep up to date, I emphasize the importance of researchers who develop projects to provide academically useful knowledge in this field.

In other articles on this topic, several characteristics are considered to determine the husbandry and, consequently, the treatment of animals in animal production systems. In addition, there is also an already defined profile called "animal keeper". However, this article adds another proposal: a practical control on the type of people to hire, defined in terms of values, empathy, attitudes, and personal characteristics identified by a series of objective scales that allow the development of a more accurate attitude. Focus on what the company can control and guarantee the minimum requirements for the execution of a good job, that is, the correct performance of their duties and the extinction of negative behaviour towards animals.

## 7. Declarations

### 7.1. Data Availability Statement

Despite this article being contextualized as a review, data were accessed empirically over fifteen years in goat, pig, horse, sheep and cattle farms in Portugal. Among which, they were passed in 12 pig farms. The data presented in this study are available on request from the corresponding author.

### 7.2. Funding

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### 7.3. Institutional Review Board Statement

Not applicable.

### 7.4. Informed Consent Statement

Not applicable.

### 7.5. Declaration of Competing Interest

The author declares that there is no conflict of interests regarding the publication of this manuscript. In addition, the ethical issues, including plagiarism, informed consent, misconduct, data fabrication and/or falsification, double publication and/or submission, and redundancies have been completely observed by the author.

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