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Training veterinarians and agricultural advisers on a novel tool for tail biting prevention

A. L. vom Brocke,[1] D. P. Madey,[1] M. Gauly,[2,3] L. Schrader,[1] S. Dippel[1]

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For numbered affiliations see end of article.

Correspondence to
Dr Sabine Dippel;
Sabine.Dippel@fli.bund.de

ABSTRACT

Introduction: Many health and welfare problems in modern livestock production are multifactorial problems which require innovative solutions, such as novel risk assessment and management tools. However, the best way to distribute such novel - and usually complex - tools to the key applicants still has to be discussed.

Materials and methods: This paper shares experiences from distributing a novel tail biting prevention tool ('SchwIP') to 115 farm advisers and 19 veterinarians in 23 one-day workshops. Participants gave written and oral feedback at the end of the workshops, which was later analysed together with the number of farms they had visited after the workshops. Workshop groups were categorised into groups showing (a) HIGH, (b) INTermediate or (c) LOW levels of antagonism against SchwIP or parts of it during workshop discussions.

Results: Group types did not significantly differ in their evaluation of knowledge transfer. However, HIGH group members evaluated the on-farm usability of the tool significantly lower in the workshop feedback and tended to visit fewer farms.

Conclusions: As antagonistic discussion can influence workshop output, future workshop leaders should strive for basic communication training as well as some group leadership experience before setting up and leading workshops.

INTRODUCTION

During the past decades, livestock production developed from family holdings to large specialised production units with complex management requirements. Many health and welfare problems encountered in modern herds are of multifactorial causation, such as lameness in dairy cows or tail biting in pigs. Multifactorial causation implies that a wide range of risk factors from several areas have to be checked and optimised in order to successfully solve a problem. At the same time, successful solutions cannot be reliably transferred between farms because the key factor combinations differ between individual farms. Therefore, problem-specific approaches in close collaboration with science are needed. One useful approach is to use knowledge-based risk analysis or management tools applied in the course of Animal Health and Welfare Planning (AHWP) for long-term improvement (Green and others 2007).

Once such tools have been developed, they need to be transferred to farms in an effective way. Veterinarians and agricultural farm advisers (referred to as VFA below) play a key role in this process, because successful solutions require an external person for assessment and discussion of results without imposing intervention measures (Whay and others 2012). While VFA traditionally were the most important direct source of new scientific findings and other knowledge, referring farmers to suitable specialists as part of AHWP plays an increasing role in extension and veterinary services, because there is too much knowledge available for one VFA to be an expert in every field (Baljer and others 2004, Jovanić and Delić 2013).

German VFA

Like in many other countries, there is a trend towards specialisation of German veterinarians as well as their practices (Radostits 2001). Most practising vets are privately organised, yet there are some official organisations funded by the federal states and agricultural insurances which specialise in certain problems such as pig health (national pig health service; Schweinegesundheitsdienst). Advisory services, on the other hand, reflect Germany's federal structure. Services can be financed by the state or be private enterprises, and advisers can work in large teams, loosely associated or independently (Hoffmann 2004, Boland and others 2005). Learning new techniques is up to the individual veterinarian or farm adviser. While German veterinarians have to participate in at least 20 hours of vocational training per year, regulations for farm advisers are much more diverse.

Many veterinary courses and most adviser courses are lecture-based theoretical seminars. As tools for multifactorial problems are usually rather complex, this raises the question of the best way of distributing these tools. Is it sufficient to present them in theoretical seminars and hand out manuals, or do they require other means of training?

Teaching and learning

Modern teaching has moved from teacher-centred lecturing towards student-centred techniques, which accommodate the different ways of how individual people receive and process new knowledge, so-called learning styles (Felder 1996, Mills and others 2005). Good teaching caters to as many learning styles as possible, which means presenting knowledge visually and verbally, with theories and facts, and with and without interactive sessions ('teaching around the cycle', Felder 1996; see Bell and others 2014a for a practical summary).

People from different professions tend to differ in their learning styles (Kolb 1981). Veterinary students are mostly active, sensing (seeking sense), visual and sequential learners (Neel and Grindem 2010); this means that they prefer applying concepts with connection to the real world in practice. The same is true for agricultural education professionals (Cano and others 1992). Thus, interactive workshops are preferable to lecture-based seminars as a means of distributing a novel tool for multifactorial problems to VFA. Nevertheless, knowledge should be presented in as many different forms as possible during a workshop, because individuals will still differ in their individual preferences (Neel and Grindem 2010, Bell and others 2014b).

A tail biting prevention tool as an example

In Germany, tail biting currently poses a considerable problem in conventional pig production. Tail biting reduces the welfare of the animals and financial gain of the farm (Schrøder-Petersen and Simonsen 2001), as well as farmer job satisfaction. German VFA mainly working with pigs have had very little experience with AHWP. Furthermore, basic pig biology related to welfare (e.g. behaviour) has been taught less intensively at German veterinary or agricultural universities than in the UK, for example.

We therefore adapted the tail biting husbandry advisory tool by Taylor and others (2012), which had previously been applied by one person in the UK, to German production conditions and for broader use. The German tool is called SchwIP, an abbreviation for 'Schwanzbeiß-Interventions-Programm' (tail biting intervention programme). SchwIP was validated by training pig veterinarians and pig farm advisers in interactive workshops, who then applied it on their customer farms and sent us their data. After farm visits, workshop participants were asked how colleagues should be trained on similar tools in the future. The majority (67 per cent) of participants recommended participation in an interactive workshop over just using a tool with a manual.

During some of the workshops, there was very intense, antagonistic discussion about the SchwIP concept in general or specific details of it. Even though questioning and discussion is part of adult learning (Bell and others 2014a), it can also decrease the quality of communication in the learning group, which has been associated with its learning success (Webb and Farivar 1999, King 2002). Therefore, this raised the question of how antagonistic discussions affect the perception of a workshop by the group and whether it may reduce the motivation to apply the new knowledge after the workshop.

Successful training of VFA for applying novel tools on farm will enable them to work more effectively with farmers. At the same time, the quality of data collected through such tools for tool refinement and research will be improved. In view of the ongoing trend towards more complex veterinary and advisory services, as well as suitable novel tools, others will also be facing the question of how to design and conduct interactive workshops for VFA. Therefore, the aim of this paper is to share our experiences from training VFA in the use of a novel tool for reducing tail biting. Besides general descriptions, we focused on differences between groups with different levels of antagonism in discussions.

METHODS

The tail biting tool SchwIP

SchwIP is a risk assessment and improvement procedure applied to a farm in regular intervals. During a SchwIP farm visit, the user (adviser, veterinarian) first interviews the pig manager about animal history and general management procedures (weaning, vaccinations, feeding, etc). Subsequently, the user directly observes a sample of pens, whereby pens where tail biting currently or regularly occurs are given preference over a random sample (problem-based approach). Direct observations include various quantitative and qualitative housing parameters (e.g. pen size, temperature, water flow rate), as well as behavioural and clinical observations (e.g. lesions, runts). The collected data on approximately 180 parameters in total are then entered in the SchwIP file (Microsoft Excel or Apache Open Office Calc), which automatically generates a farm-specific report with risk profile and calculations for various measures (e.g. stocking density, temperature suitability). After the user has discussed the report with the pig manager, the latter decides which risk factors found on the farm he/she wants to minimise and which measures will be used in order to do so. This is documented in the farm plan. After a suitable interval (e.g. one year), the farm assessment is repeated, compliance and success are checked, and a new plan is drawn up (Ivemeyer and others 2012).

Participants

Potential workshop participants were invited through calls in professional magazines, newsletters and at conferences and meetings. Of 150 applicants, 134 fulfilled

the criterion of being a farm adviser or veterinarian who would be able to apply SchwIP on at least one farm with more than 400 fattening pigs and a current tail biting problem. Participants were trained in 23 one-day workshops all over Germany from June to September 2012. A PhD student (ALvB) who had received one day of communications training by a professional trainer conducted the workshops. Participants included a total of 115 farm advisers specialising in pig production, of which 26 were official advisers, 79 were private advisers and 10 were advisers from breeding or pig marketing organisations. A further 14 veterinarians from private practices and 5 from national pig health services also took part. Depending on logistics, the workshops consisted of either single or mixed profession groups (14 adviser, 1 veterinarian and 8 mixed groups). The workshop group size was 4–6 people, except for five groups with 7–10 participants. In all but three groups, at least some participants knew each other. Workshop participation was free of charge and the only condition was a signed agreement to apply SchwIP on at least one farm after the workshop.

Workshops

Workshops took place during one day from 09:00 until approximately 16:30, with 15-minute breaks approximately every two hours (or as needed), and a one-hour lunch break. They consisted of theoretical and practical sessions which were both a mixture of interactive (Reeves and Hedberg 2003) and cooperative learning (Dooley and Kossar 2010). About a week before the appointed date of the workshop, an email was sent to the participants with information concerning the location and agenda and asking them to bring a laptop. The workshop started in a meeting room with a projector. A folder was placed at each seat, which contained printouts and a CD with presentations and explanations (Microsoft Power Point), forms for the farm visit (e.g. confidentiality agreement) and a SchwIP file manual. During breaks, the trainer copied the SchwIP file to the laptops of the participants and established the necessary macro settings in MS Excel/Apache Open Office Calc. After an introduction of the trainer and the agenda, participants were encouraged to actively participate in the workshop, including introducing themselves and their main working areas.

The first theoretical session started with a brief overview of SchwIP and the associated research project followed by an introduction to pig biology and tail biting causation. Then the structure of the SchwIP file was explained using screenshots, and potentially ambiguous interview questions were outlined using pictures and drawings. The selection of sample pens for direct observations was explained by means of examples followed by an exercise for the participants due to its complex nature. After a 15-minute break, the direct observations in the sample pens were explained. Here, the focus was on aspects where participants had no previous experience (such as with observation of behaviour), and on parts where a certain level of agreement was required by the project (classification of clinical parameters and housing characteristics). Finally, the report generated by the SchwIP file was explained and participants were briefed about the survey period and data transfer.

During the second half of the day, participants simulated a SchwIP application. Before the workshop, one of the participants had organised a farm for a test assessment. The respective participant answered the interview questions in place of the farmer, and after a one-hour lunch break the group went to the test farm. In the barn, the trainer demonstrated a pen assessment and gave practical advice. Subsequently, the group moved to a new room and each participant assessed one or two pens within the same room independently on his/her own under supervision of the trainer. After the barn survey, the group went back to the meeting room, where each participant entered the data into the SchwIP file and created a farm report. The report, as well as the possible aims and measures of the workshop farm, was then discussed as a group.

Feedback from participants

At the end, after all open questions had been discussed, participants were handed out anonymous feedback forms to grade the workshop as well as trainer performance with nine rating items scoring from 1 to 6 (1=very good, 6=very bad, Table 1), and one open question to allow participants to comment and give suggestions for improvement. When everybody had completed the form, participants were asked for an informal oral group feedback on the trainer, workshop and SchwIP and this was written down by the trainer.

Parts of the technical design of the SchwIP file were changed based on feedback from the first two workshops to make it more user-friendly. A few other minor changes were implemented up to workshop 15.

One year after the workshops, 72 of the initial 84 participants repeated the farm visits in order to update the risk assessment and farm improvement plans. They were asked for their opinion on SchwIP via anonymous written feedback forms. Forty-six workshop participants answered question about how interested colleagues should be instructed before using SchwIP: (a) intuitively, (b) with written instructions or (c) after training in a workshop (multiple answers possible).

Analysis

Workshop groups were subjectively categorised into one of three group types based on the level of antagonism against the SchwIP concept or specific SchwIP parts (e.g. definitions of terms) in discussions during the workshop. Categorisation was done directly after the workshop based on memory and notes of the trainer. Workshop groups with low levels of antagonism against SchwIP or parts of SchwIP were characterised by productive discussions (LOW; N=7). In intermediate groups

TABLE 1: Evaluation results from 23 workshops where pig veterinarians and farm advisers were trained to use an on-farm tool for tail biting prevention

Item†	Workshop group type* HIGH (n=5)	INT (n=11)	LOW (n=7)
How would you score the workshop regarding…			
Fulfilment of your expectations	2 (2; 3)	2 (1; 2)	2 (1; 2)
Tool usability on farm	**2.5 (2; 3)[a]**	**1.5 (1; 2.5)[b]**	**2 (1; 3)[ab]**
Scope/detail	2 (2; 3)	2 (1; 2.5)	2 (1; 2.5)
Work pace	**2 (2; 3.5)[a]**	**2 (1; 2)[ab]**	**1 (1; 2)[b]**
Knowledge transfer	2 (2; 2.5)	2 (1; 2)	1 (1; 2.5)
How would you score the implementation/quality of the following items during the workshop?			
Theoretical introduction SchwIP	2 (2; 2)	2 (1; 2)	1.5 (1; 2)
Practical session	2 (2; 2.5)	2 (1; 2.5)	1 (1; 2)
Discussion	2 (1; 3)	2 (1; 2)	1 (1; 2)
Handout	2 (1; 2)	2 (1; 2)	1 (1; 2)
Number of farm visits‡	0.5 (0; 1)	1 (0; 2)	1 (0; 2)

Workshop groups were classified based on the level of antagonism in their discussions (group type) and median evaluation scores (minimum; maximum) as well as the numbers of farms visited after workshop were compared between group types
*HIGH=groups with highly antagonistic discussions which were disrupted by persistent questioning; INT=groups with slightly antagonistic, non-disrupted discussions; LOW=groups with productive, non-antagonistic discussion. Numbers given are median per group type across workshop group medians (minimum; maximum workshop group median value)
†All items received scores from 1=very good to 6=very bad
‡Number of farms where participants applied the new tool after their workshop
[a,b]Superscripts with **bold** responses indicate significant differences between workshop group types (adjusted P<0.05)

(INT; N=11), one or two participants were slightly antagonistic without influencing the flow of discussions. In groups with intense antagonism against SchwIP or parts of it, the discussions were disrupted as a result of persistent questioning by one or two participants (HIGH; N=5).

The median number of farm visits per workshop group was used as a measure of motivation to implement the new knowledge. Workshop evaluation results, as well as the number of farm visits, were tested for differences between group types using non-parametric Kruskal-Wallis tests with subsequent Wilcoxon rank-sum tests for pairwise comparisons (SAS Institute Inc. 2008). Tests were Bonferroni adjusted, and results were regarded as significant when adjusted p-values were smaller than 0.05.

RESULTS

Across all workshops, irrespective of group type, all items on the feedback form received a median score of 2 (good). Five items were given scores from 1 (very good) to 4 (unsatisfactory) and 4 items from 1 to 5 (bad). No participant gave a score of grade 6 (very bad). The number of participants who answered each item ranged from 121 to 123. One workshop group gave no oral feedback and participants of another workshop did not fill out the feedback forms. Overall, only 41 participants (30 per cent) wrote in the comments field on the form. Aspects of the workshop often appreciated in oral feedback were the lecture on pig behaviour and the quality and timing of handing out the workshop documentation.

HIGH groups (N=5) assigned significantly higher (worse) scores for on-farm usability than INT groups (i.e. rated it less usable; N=11; Table 1), but not higher than LOW groups (N=7). This was also reflected in the comments on the evaluation forms (e.g. HIGH: 'difficult to apply on farm' v INT: 'good tool, you can do a lot with it on a farm'). HIGH furthermore assigned significantly higher (worse) scores for work pace ('too slow') than LOW groups, but not higher than INT groups. The scores for all other items, including the transfer of knowledge (Fig 1), did not differ significantly between group types.

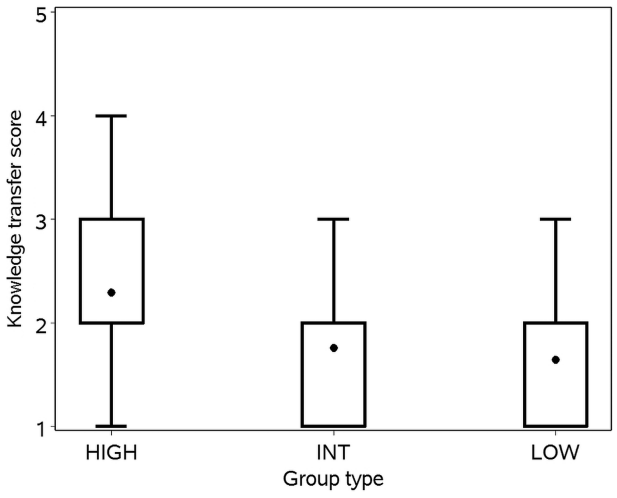

FIG 1: Distribution of evaluation grades for the item 'knowledge transfer during workshop' in workshop groups with high, intermediate or low levels of antagonism during discussions (group type HIGH, INT or LOW, respectively; knowledge transfer score *1=very good, 6=very bad*; •=mean, median values for all group types=2.0; P>0.05)

Of the 134 participants, 84 (62 per cent) applied SchwIP on at least one farm by November 2012. A total of 142 farms were visited in that period. The overall median number of farms visited per workshop group was 1 (range of medians 0–2). HIGH group participants tended to visit fewer farms than INT or LOW participants, but there were no significant differences between group types (Table 2).

Regarding the question of how future applicants should be instructed before using a tool similar to SchwIP, 46 participants used 5 combinations of answers: 16 (35 per cent) chose after training in a workshop and with written instructions, 13 (28 per cent) chose after training in a workshop only, 9 (20 per cent) chose with written instructions only, 4 (9 per cent) chose intuitively and with written instructions, 3 (7 per cent) chose intuitively and after workshop training, and one chose all three options.

DISCUSSION

Novel tools for improving livestock production can assist VFA to more effectively help farmers improve animal health, welfare and production. Additionally, they can be used for knowledge transfer between research and farms. However, as such tools are usually complex they require training for correct application. This paper describes experiences from workshops for training farm advisers and veterinarians in the use of a novel tail biting prevention tool.

From the German fattening pig industry's point of view, AHWP is a rather new advisory concept. Furthermore, regarding tail biting as a plainly multifactorial problem was one of the more progressive concepts discussed among German fattening pig stakeholders at the time of the workshops. Nevertheless, the high proportion of groups with participants who were intermediately or strongly antagonistic to SchwIP (5 HIGH and 11 INT groups v 7 LOW) was rather surprising. A possible explanation might be that participation did not bear any liability except a promise to apply SchwIP on at least one farm. In addition, some participants had been sent by their superiors, because at the time of the workshops public pressure to leave pig tails intact was increasing fast.

TABLE 2: Numbers of participants who applied the new tool after their workshop on no farms versus on one or more farms by group type based on the level of antagonism during discussions (χ^2=0.61, df=2, P=0.737)

	Workshop group type*			
	HIGH	INT	LOW	Total
Tool applied on no farms	16	26	18	60
Tool applied on ≥1 farm	15	33	26	74
Total	31	59	44	134

*HIGH=groups with highly antagonistic discussions which were disrupted by persistent questioning; INT=groups with slightly antagonistic, non-disrupted discussions; LOW=groups with productive, non-antagonistic discussion

The implementation rate of 62 per cent of participants applying the tool on at least one farm was lower than expected, given the (mostly) voluntary participation. One possible explanation is that workshops took place from June till September, resulting in participants starting their farm visits during harvest season, that is, a period where farmers have little time for visitors. We therefore recommend adjusting training plans to farming seasons, which had not been possible in our project.

Our initial concerns about the effect of antagonistic workshop participants on general workshop outcome were not confirmed. The crucial items of knowledge transfer as subjectively judged by participants and tool application on farm did not differ significantly between workshop group types. This agrees with the concept of questioning and discussing being part of adult learning (Bell and others 2014a) as well as the tendency towards learning in an actively questioning way in agricultural and veterinary students (Cano and others 1992, Neel and Grindem 2010). Correspondingly, on-farm usability was evaluated best by INT groups, where this item had been discussed slightly antagonistically yet more balanced than in HIGH groups. This apparently constituted a good way of active learning.

One statistical limitation is the rather small number of observations, which might have influenced significance levels. The significantly lower evaluation of tool usability on farm and workshop work pace by HIGH groups, together with the tendency for more farm visits by LOW groups, implies that balanced discussions are important for good workshop results. Workshop leaders should therefore strive to keep all participants equally involved in discussions, such as by forming subgroups and actively managing domineering participants (Bell and others 2014b).

As often happens in research projects, the workshops in this study were led by a PhD student with limited experience as a workshop leader. She had been trained for one day by a professional communications trainer at the start of the project. This proved to be very valuable. The advice on workshop structure and dealing with disruptive behaviour especially was very useful, though the latter also needs personal experience and a certain level of self-confidence for successful application. This should (if possible) be taken into account when selecting or training a future workshop leader.

A group size of six people was perceived as optimal, as it was still manageable during practical training in the barn and participants could work in pairs. Also, mixing professions (here advisers and veterinarians) was very helpful because it gave additional momentum to discussions due to the differences in professional knowledge, experiences and approaches.

Owing to the complexity of tail biting and its causality, we included a short basic lecture about pig behaviour

and tail biting causation in order to bring participants to a common level. This was much appreciated by the participants because it had not been part of their formal education.

Participants gave positive oral feedback on the workshop documentation handed out at the start of the workshop because this enabled them to focus on following the presentations rather than on taking notes. Documentation should include all the information participants need for later application in order to use it as a reference after the workshop.

The combination of theoretical and practical sessions, together with frequent breaks, helped to keep participants focused. In addition, practical training is essential for tools which have to be applied in a barn. Applying the new knowledge helps in understanding how and why to do something and questions often arise during the application of instructions which had seemed clear 'in the classroom'. This was also reflected in the answers to the question of how colleagues should be trained on similar tools in the future where 67 per cent of participants recommended training in an interactive workshop.

In conclusion, multifactorial health and welfare problems in modern livestock production necessitate novel tools to aid veterinarians, farm advisers and farmers in the complex tasks of health and welfare management. Interactive training workshops are needed for successfully distributing such tools. As the quality of workshop content and also of discussions during the workshop can influence workshop results, future workshop leaders should strive for basic communication training as well as some group leadership experience before setting up and leading workshops.

Author affiliations
[1]Institute of Animal Welfare and Animal Husbandry, Friedrich-Loeffler-Institut, Celle, Germany
[2]Department of Animal Science, University of Göttingen, Livestock Production Systems Group, Göttingen, Germany
[3]Faculty of Science and Technology, Free University of Bolzano, Animal Science, Bozen, Italy

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