

Making animal welfare labelling more transparent - The potential of using virtual reality glasses

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Abstract – Intensive pig husbandry has been subject to increasing public criticism including a clear demand for more animal friendly housing systems and transparency. Thereon, various animal welfare labels have been introduced to help consumers making more informed purchasing decisions with regard to animal welfare. However, such labels need to be accompanied by adequate information to reveal full market power. The aim of our study is to investigate whether different information modes influence understanding and evaluation of the 'Haltungsform' label that has been introduced by German retailers in 2019. We thereby investigate the case of a level 3 stable for pigs ("outdoor climate stable") and used a quantitative research approach with 4 experimental groups (n=200). Each group was presented with different modes of information concerning the label: 1) text only, 2) text and stable pictures, 3) 360° stable video via tablet, 4) 360° stable video via virtual reality glasses. Results show that regardless of information mode, participants general understanding of the label improved. Participants rated animal welfare as well as acceptability of the stable higher after information was given. However, amongst all four information treatments virtual reality glasses are particularly promising to transfer information about housing conditions in an entertaining and effective way.

INTRODUCTION

Over the last decades, intensive livestock production, especially pig husbandry, has been exposed to growing public criticism resulting in a considerable loss of public acceptance (Krystallis et al., 2009; Weible et al., 2018). In this context, animal welfare is a main concern with many people demanding for more nature and species-appropriate housing conditions (Boogaard et al., 2011) and increased transparency in agricultural activities (Caracciolo et al., 2016). In order to comply with citizens' desire, in the last years various front-of-package labels have been developed to inform consumers about housing conditions of animals. Indeed, labels have been shown to help consumers making more ethical buying decisions (Ingenbleek and Immink, 2011), even though little is known about what makes animal welfare labels most effective (Cornish et al., 2020). However, Cornish et al (2020) found, that additional explanatory information about animal welfare standards behind a given label increase purchase intention and thus help consumers translate their personal attitudes into actual behavior. Nowadays consumers are confronted with plenty of labels, which are commonly presented with little information. However, giving more information to consumers may

help revealing the full market power of animal welfare labels due to increased understanding and transparency. In Germany, the 'Haltungsform' label has been introduced by German retailers in 2019 and is widely used for meat and meat products. The label is intended to provide a quick overview of housing conditions by referring to already existing programs and standards and classifying them. It comprises four levels ranging from 1) indoor stables to 4) premium. Against this background, the aim of our study was to analyse how different information modes influence understanding and evaluation of a pig stable corresponding to level 3 of the 'Haltungsform' – an outdoor climate stable. We further analyse, how different modes of information presented are evaluated in terms of utility, user experience and usage potential.

METHODS

The study was conducted between January and February 2022 at the University of Göttingen with a total of 200 participants, all students without agricultural background and who identify as pork-meat eaters. We used a quantitative research approach with 4 experimental groups (n=50 each) consisting of an online questionnaire and an information treatment (Figure 1).




Part 1: Questionnaire	
<ul style="list-style-type: none"> Sociodemographics, involvement in and evaluation of pig husbandry Meat consumption, buying and information behaviour Affinity for technology, experiences with VR glasses Familiarity with different animal welfare labels Understanding and evaluation of level 3 based on the label only 	
Part 2: Information treatment	
Group 1: Information text on level 3 stables	
Group 2: Information text + 2D Pictures of a level 3 stable	
Group 3: Information text + 360° video of a level 3 stable via tablet	
Group 4: Information text + 360° video of a level 3 stable via VR glasses	
Part 3: Questionnaire	
<ul style="list-style-type: none"> Understanding and evaluation of level 3 stables Evaluation of the information mode 	

Figure 1. Overview of the study design.

The study also included questions on the willingness to buy and willingness to pay for minced meat from a level 3 stable, both before and after information treatment, which are not discussed in this paper.

The information treatment differed between the four groups in the mode of presenting information about the outdoor climate stable (i.e. level 3) (Figure 1).

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RESULTS

The total sample consisted of 55.5% men and 44.5% women with an average age of 23.1 years with similar distribution in all four groups. When it comes to general characteristics of the sample, participants' self-perceived knowledge about ($\mu=3.3$; $\sigma=1.1$) and interest in ($\mu=3.9$; $\sigma=1.2$) German pig husbandry was rather low to medium (Likert scale: 1 = very low to 7 = very high). With regard to the general evaluation of German pig farming, participants rather did not agree that pig husbandry is acceptable ($\mu=3.2$; $\sigma=1.4$) and pigs are kept in a species-appropriate manner ($\mu=2.6$; $\sigma=1.3$) (Likert scale: 1 = not agree at all to 7 = fully agree). Furthermore, more than 60% of the total sample rate information about pig housing conditions provided at the point-of-sale to be insufficiently and would like to receive more information.

Table 1. Understanding and evaluation of an outdoor climate stable (level 3) for pigs before and after presenting information.

Statement		Experimental group			
		1	2	3	4
I can well imagine how animals live in housing systems of level 3.	Before	3.5 (1.6)	2.9 (1.2)	3.2 (1.3)	3.4 (1.4)
	After	5.7 (1.1)	5.5 (1.0)	5.8 (0.9)	5.9 (1.1)
I don't understand what level 3 means.	Before	3.8 (1.9)	4.4 (1.3)	4.3 (1.6)	3.9 (1.7)
	After	2.0 (1.3)	2.1 (1.2)	2.0 (1.3)	1.8 (1.3)
The pigs have more space than legally required.	Before	4.5 (1.9)	4.2 (1.8)	4.7 (2.0)	4.1 (2.0)
	After	6.5 (0.8)	6.6 (0.7)	6.6 (0.6)	6.4 (1.0)
The pigs have an area with straw bedding in their pen.	Before	5.1 (1.9)	5.0 (1.7)	5.4 (1.8)	4.9 (1.7)
	After	6.0 (1.0)	6.1 (0.9)	6.6 (0.7)	6.5 (0.7)
The stable is built in a way that pigs have contact to fresh air, e.g. through windows or open stable.	Before	5.8 (1.3)	5.5 (1.2)	5.8 (1.2)	5.4 (1.5)
	After	6.6 (0.6)	6.7 (0.6)	6.7 (0.6)	6.7 (0.6)
The pigs are healthy.	Before	4.7 (1.8)	4.2 (1.6)	4.4 (1.7)	4.6 (1.6)
	After	5.5 (1.5)	5.2 (1.1)	5.6 (1.2)	5.5 (1.1)
Pigs in housing systems of level 3 are doing well.	Before	3.9 (1.2)	3.7 (1.1)	3.8 (1.1)	3.9 (1.3)
	After	4.8 (1.4)	4.9 (0.8)	4.5 (1.1)	4.7 (1.3)
I consider it acceptable to keep pigs in housing systems of level 3.	Before	4.5 (1.4)	4.1 (1.2)	4.1 (1.3)	4.3 (1.3)
	After	5.2 (1.4)	5.3 (0.9)	5.1 (1.5)	5.0 (1.4)

Displayed are means and standard deviations (n=200).
 Evaluation on a 7-point Likert scale from 1 = not agree at all to 7 = fully agree.

All information treatments increased participants general understanding of how an outdoor climate stable looks like, including specific key improvements of housing conditions. Furthermore, animal welfare as well as acceptability of the stable was rated higher after information was given (Table 1). With regard to utility, user experience and usage potential, the VR glasses were rated best amongst all four information modes (Figure 2).

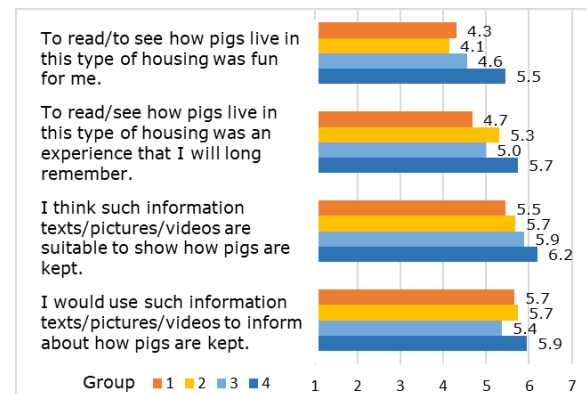


Figure 2. Evaluation of information modes.
 Evaluation on a 7-point Likert scale from 1 = not agree at all to 7 = fully agree (n=200).

DISCUSSION & CONCLUSION

The comprehensibility as well as the acceptability of an outdoor climate stable corresponding to level 3 of the 'Haltungsform' increased after information was given, independent of the way information was provided. Furthermore, results showed that VR devices are advantageous with regard to the viewing experience and perceived utility for information provision compared to text only, text and photos and a 360-degree video presented via tablet.

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