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Measuring Public Concerns? Developing a Moral Concerns Scale Regarding Non-Product Related Process and Production Methods

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Received: 23 March 2018; Accepted: 26 April 2018; Published: 28 April 2018



Abstract: In recent years, citizens have been more frequently scrutinizing non-product related process and production methods (npr-PPM) of various products, such as food, out of moral considerations. In 2014, the World Trade Organization's (WTO) Dispute Settlement Body reached a landmark decision and accepted an European Union (EU)-wide import ban of seal products under the justification of Art. XX (a) General Agreement on Tariffs and Trade (GATT) due to "public moral concerns". However, up to now there has been no valid and reliable scale to quantify moral concerns. Therefore, we developed a tool—the Moral Concerns Scale (MCS)—to measure moral concerns of a society about, for example, animal welfare or child labor in a valid and reliable manner for npr-PPM. This scale was developed and tested in two independent studies with German citizens (in 2016 and 2017) using three case studies: hens laying eggs in battery cages, the inhumane killing of seals, and the use of child labor. According to the results of both studies, the reliability and validity of the developed scale can be confirmed.

Keywords: moral concerns; non-product related process and production methods; animal welfare; child labor; scale development; partial least squares

1. Introduction

A change of consciousness, a shift in values, and a change in buying behavior towards sustainability, especially of consumers in industrialized countries, has been observed in recent decades. Consumers are more and more interested in the question of how the products they consume are produced [1–3]. In many cases, these values are directed towards the characteristics of the production process, which cannot be detected in the final product. In the literature, such characteristics are often referred to as "production process attributes" (instead of "content attributes"), non-product related process and production methods (npr-PPM), or "credence attributes" [4]. Thus, ethical and moral motives influence the buying decisions of products, such as food, and can lead to an avoidance of individual products [5–7]. This shift in values is accompanied by a growing criticism regarding various production methods, which has occurred due to different motivations such as one's own health or animal welfare [8,9]. However, this development has not occurred in synchrony on a worldwide level. Currently, many countries often have very low production standards in comparison to the European Union (EU) [10]. Thus, in a free trade situation, consumers in some countries are confronted with products that may be produced using production standards such as child labor or poor animal welfare standards which cannot be detected in the product itself [11]. These npr-PPMs are issues of considerable concern, especially for some citizen groups in developed countries [12]

and sometimes even in developing countries [13]. Consequently, free trade and the World Trade Organization (WTO) are losing the support of the wider public, which can be observed in controversial debates about the Transatlantic Trade and Investment Partnership (TTIP) [14,15]. Until now, there have been, with few exceptions, only unsuitable, expensive, or confrontational measures to implement supranational measures such as mandatory labeling of products or import bans on products with potentially worrying npr-PPM [16,17].

In 2014, the WTO's Dispute Settlement Body accepted the EU import ban on seal products. The EU banned the import and sale of seal products under the justification of Article XX (a) GATT. Thereby, the EU import ban is the first WTO case in which the Appellate Body accepted a trade restriction based on moral concerns regarding non-product related process and production methods [18,19]. In the past, the WTO has been very reluctant to allow import restrictions or mandatory labeling on the basis of such unobservable npr-PPM. However, with the decision about seal products, the WTO Appellate Body has, for the first time, outlined a way to legitimize trade restrictions based on moral concerns. Nonetheless, this approach is also viewed critically, least so because of the danger of hidden protectionism. It is important to make a clear distinction between the justified public moral concerns and the use of such arguments for the purpose of protectionism. The aim is a WTO regime that may achieve a level playing field and fair competitiveness in the field of sustainability and, thus, promote a higher public acceptance of free trade.

Thus, the further use of this exception clause depends, to a large extent, on the fact that a valid and reliable measurement of moral concerns is possible. However, there is a lack of clarity in determining when public morality is seriously endangered and needs to be protected [20]. Furthermore, there is a need to clarify if it is possible to justify mandatory labeling or import bans due to moral concerns regarding undetectable npr-PPM (such as animal welfare or the use of child labor) in a WTO country [20].

Therefore, we raise the question of how to measure the moral concerns of a society in a valid and reliable manner. It is important to verify whether public morality is really compromised [20]. Thus, we developed a trustworthy science-based tool, which allows for the valid and reliable measurement of the degree of public concern within a particular society regarding npr-PPM. This Moral Concerns Scale (MCS) is discussed and validated using three important and current sustainability topics as examples: egg-laying hens in conventional battery cages as an animal welfare problem, the inhumane killing of seals, and the use of child labor as an important part of the social pillar of sustainability. The scale may offer opportunities to justify mandatory labeling or import bans on products from production systems which violate public ethical beliefs and morality [20]. It may also be useful as a tool for the internal Corporate Social Responsibility (CSR) management of companies [1,7,21].

As a first example and as a benchmark to test the scale, the killing of seals was chosen. Public concern regarding seal welfare was one of the central points in the WTO's decision about the EU import ban of seal products [6,19]. The second example, the traditional battery cage system for egg-laying hens has been criticized for several years due to the restriction of opportunities for hens to express species-specific behaviors, such as scratching their wings or sandbathing [22,23]. This animal welfare deficit led to a ban of conventional battery cages in Germany in 2010 and in the EU in 2012 [24–26], however, the selling and importing of unlabeled battery eggs are still allowed, especially in the form of processed products [27]. As a third case study, the use of child labor as an example of a severe worldwide humanitarian problem was included to compare the moral concerns regarding animal welfare topics and social challenges. In surveys, the people often stress that they were concerned about the working conditions in the production processes of globally produced products and that they wish to buy products free of the involvement of child labor, but have limited information at the point of sale [28].

According to the authors' knowledge, there is no valid and reliable scale to measure the moral concerns regarding npr-PPM. A verified scale, in which the defined questions are used to measure a complex construct such as a moral concern, must be distinguished from an ad-hoc questionnaire.

The aim is that in future of WTO decisions, moral concerns will be measured on the basis of such a scale so that comparable and scientifically sound measurements are possible. Against the background of the cited research gap, we followed the scale development process according to Anderson and Gerbing (1988) and started with a literature review to define the constructs and an initial item pool. On the basis of expert discussions and literature research, we tested the validity and reliability of the identified items and scales using two studies with German citizens.

2. Conceptual Framework of the Moral Concerns Scale

In general, concerns are a latent construct of several dimensions that can be observed in similar studies and scales [29]. To develop a multidimensional scale, individual sub-constructs must be defined [30]. Thus, related scales and themes, which are presented in the following paragraph, were investigated and used to generate the MCS constructs and respective items. Overall, three dimensions could be identified to measure moral concerns: values (VAL), emotions (EMO), and cognitive assessment (COG). Additionally, concerned people are ready to act against the perceived problem (ACT) and have no willingness to accept (WTA) the contested products even in the case of price reductions.

According to Stöber (1995), worrying is a construct made up of cognitive and emotional dimensions. Furthermore, the Ecology Scale according to Maloney and Ward (1973) measures ecological attitudes and knowledge and is based on classical attitude theory, which defines concerns as a construct of the affective, cognitive, and conative dimensions [29,31,32]. The affective dimension describes an emotional involvement or impact such as anger or rage, the cognitive dimension describes a rational recognition of the problem, and the conative attitude dimension includes a readiness to act [31]. Diekmann and Preisendörfer (2003) developed a scale to measure general environmental concerns following the concept of Maloney and Ward (1973) and The New Environmental Paradigm Scale according to Albrecht et al. (1982) [32–34]. This scale is often used in the literature and is the basis of other scales (for example, References [1,31,35]) and is, therefore, a suitable base for the two constructs: emotions and cognitive assessment of the MCS.

As moral concerns not only include attitudes but also personal moral principles, it is important to include values to measure moral concerns that are probably violated. Therefore, we used the Moral Foundation Questionnaire [36], which uses five moral principles (harm/care, fairness/reciprocity, ingroup/loyalty, authority/respect, and purity/sanctity) and is based on the Schwartz Equality Value Item [37], to measure general moral concerns [36].

To examine the attitudes toward animals and animal welfare, the Animal Attitude Scale according to Herzog et al. (1991) is a frequently used scale [38]. However, this scale deals with a general examination of attitudes toward animal protection and not with moral concerns regarding npr-PPM. Nevertheless, it is an internationally known scale and provides suitable aspects for the development of the item set to measure moral concerns [39].

According to Bohlen et al. (1993)—the developers of a scale to measure ecological concerns—the behavior of citizens plays an important role in the measurement process [40]. They assume that concerned citizens show a higher readiness to act [41], for example, taking part in demonstrations, showing ecological and sustainable buying decisions [1,42,43], and supporting Non-Governmental Organization (NGOs) or groups who fight for animal or children's rights [44].

As a consequence of moral concerns, citizens should not be willing to buy contested products, even if they are offered at lower prices. Therefore, the question of whether people leave morality behind due to a price reduction is important. If moral concerns are strong, price reductions should not tempt consumers to buy. Thus, the moral concerns describe a latent construct which consists of values (VAL), emotional reaction (EMO), and a cognitive assessment of the problem (COG), which leads to a desirable action (ACT) and no willingness to accept (WTA) [43,45,46]. Against this background, helpful elements could be extracted to develop the item set of the MCS (see Table 1).

Table 1. The related scales used as inspiration for the three dimensions of the Moral Concerns Scale (MCS).

Authors	Scales/Context	Dimension
Maloney and Ward (1973)	Ecology Scale	Emotions (EMO)
Diekmann and Preisendörfer (2003)	General Environmental Concern	Cognitive assessment (COG)
Albrecht et al. (1982)	The New Environmental Paradigm Scale	Cognitive assessment (COG)
Graham et al. (2011)	Moral Foundation Questionnaire	Values (VAL)
Schwartz (1992)	Schwartz Equality Value Item	Values (VAL)
Herzog et al. (1991)	Animal Attitude Scale	Values (VAL)
Bohlen et al. (1993)	Measures of Environmental Concern	Readiness to act (ACT)
De Steur et al. (2010)	Willingness to accept and purchase genetically modified rice with high folate content	Willingness to accept (WTA)

Source: Own elaboration.

3. Material and Methodology

3.1. Pilot Study

The validity of the MCS was measured using two independent studies with German consumers. Based on the published research and expert table discussions, we designed an initial questionnaire and conducted a pilot study with 202 German citizens in March 2016 via an online access panel to test and reduce the item set and validate the MCS. As an example of an ethical problem, we chose battery cages for egg-laying hens, which have been prohibited in Germany since 2010 and in the EU since 2012. The pilot study used a convenience sample, consisting of participants over 18 years of age, living in Germany. The average participant age was about 40 years old, with 49% male and 51% female participants taking part in the survey (Table 2).

Table 2. The demographic characteristics of both studies.

Variable		Pilot Study <i>n</i> = 202	Representative Study <i>n</i> = 1009	German Population (%)
Gender	Female	51.5%	52.7%	50.7%
	Male	48.5%	47.3%	49.3%
Age (years)	18–25	19.8%	10.5%	23.5%
	26–35	20.3%	13.9%	12.6%
	36–45	20.3%	13.7%	12.5%
	46–65	36.6%	46.7%	30.1%
	>65	3.0%	15.0%	21.0%
Urbanity of residence	Rural (under 5000 inhabitants)	16.3%	22.1%	14.4%
	Urban (5000–20,000 inhabitants)	18.3%	22.0%	26.3%
	Highly urban (20,000–100,000 inhabitants)	27.2%	20.8%	27.8%
	Extremely urban (more than 100,000 inhabitants)	38.1%	35.1%	31.6%

Source: Own elaboration, Statistisches Bundesamt Germany (2016).

3.2. Representative Study

After reducing and improving the item set, we conceptualized a second questionnaire for a representative online survey of the German population (quotas for age, gender, and income) with 1009 German citizens in January 2017. In this second survey, all participants answered questions concerning battery cages for egg-laying hens. Afterward, the survey was split into two parts. One part dealt with child labor ($n = 508$) and the second part with seal killing ($n = 501$). The two additional examples were used to improve the item set in other contexts. The demographic profile of the two independent studies is shown in Table 2 (in comparison to the German population).

3.3. Content Validity, Unidimensionality, and Internal Consistency

The development of the scale followed the process according to Churchill (1979) and Anderson and Gerbing (1988), which includes three steps [47,48]. First, the individual constructs must be identified

and tested for content and face validity. Second, the dimensionality and the internal consistency of the item pool must be checked. As a last and third point, the construct validity—consisting of convergent, discriminant, and nomological validity—needs to be tested [46,48,49].

For the initial item purification and to measure content validity, logical and plausible matters were considered. Thus, items were identified in several steps, specified, and adjusted due to several discussions with experts in an interdisciplinary exchange. According to the expert opinions (round tables of marketing professors and Ph.D. students), the content and the face validity were tested [1,50]. Based on the dimensions (namely VAL, EMO, COG, ACT, and no WTA with a price reduction) and a pool of 43 items, statistical analyses, including exploratory factor analyses (EFA) and confirmatory factor analyses (CFA), were conducted to reduce the item set and to test its validity and reliability. The identified dimensions (VAL, EMO, COG, and ACT) were assessed using a five-point Likert scale. To test if people would accept a morally contested product due to a low price and, therefore, their WTA with a price reduction, participants were asked at which price they would buy the product (for example, battery eggs). As a further option, they could choose the item “I would not buy the product of [battery eggs/seal products/child produced chocolate] regardless of the cost” or “I don’t care about the price of [battery eggs/seal products/chocolate produced by children].”

As a further step of validity, the items were tested for unidimensionality using an exploratory factor analysis (EFA), where the allocation of single items on the factors is not defined and remains open [51]. In this regard, at least one factor with an Eigenvalue greater than 1 should be extracted, and the extracted factors should explain the majority of the overall variance [52]. As an indicator for reliability, Cronbach’s alpha should be above the threshold of 0.8 [42,48].

In the EFA, items that were not useful for the scale were identified and were, therefore, dropped. With the reduced item set, a CFA was conducted using a structural equation model in SmartPLS 3 to test the internal consistency in the form of composite reliability (CR) (the value should be larger than 0.6) and the average variance extracted (AVE) (the value should be greater than 0.5) [47–49]. The aim of the scale, however, was not to maximize the internal consistency but to achieve a high range of heterogeneity between the single items with the greatest possible internal consistency [36]. The individual dimensions should be very clearly determined and differentiated. To test the multidimensional model, two direct items to assess the moral concerns were integrated into the questionnaire and the model. Participants were asked to rate if they are morally concerned about the three cases (battery hens, the killing of seals, and the use of child labor) on a five-point Likert scale.

3.4. Construct Validity

The revision of construct validity, which consists of convergent, discriminant, and nomological validity, was tested using structural equation models [53]. The models included the three dimensions (VAL, EMO, and COG) and the direct request of concern (CONC). The two additional dimensions—ACT and WTA—were added to test nomological validity.

First, the convergent validity was verified, which is given when different measurements of the same construct have a high correlation. Therefore, a good model fit, such as the standardized root mean square residual (SRMR) (value must be under the required threshold of 0.08), and high and significant factor loadings are necessary to confirm the convergent validity [42,52,54].

Second, to test the discriminant validity, it is important to control whether the measurements of different constructs of other parts correlate with each other. The aim is to create constructs having no strong connections with constructs of the same content [55,56]. Therefore, the constructs ACT and no WTA were added in the Partial Least Squares (PLS) model to test the discriminant and nomological validity. For the statistical assessment of discriminant validity, the cross-loadings and the Fornell-Larcker criterion were used and checked [57]. A new approach to test discriminant validity is the determination of the heterotrait-monotrait ratio of correlations (HTMT), which, in variance-based equation models, is more reliable than the Fornell-Larcker criterion [58]. According to Voorhees et al. (2016), the cut-off value of the HTMT is 0.85 [59], and according to Henseler et al. (2015a), the threshold

is under 1.0 [52]. A further important criterion is to check the multicollinearity and, thus, if the items are correlated. Therefore, the variance inflation factor (VIF) should not be much greater than 1 [52]. In our model, the discriminant validity was measured through an investigation of the correlation of the dimensions VAL, EMO, COG, and CONC in the first step and the correlations between these dimensions and the additional dimensions ACT and WTA [60]. The direct request of the moral concerns (CONC) was implemented using the items “About the well-being of [battery hens/seals/children] I am ...” (CONC1) and “About the fact that there are/is still [battery hens/seal hunting/child labor] I am ...” (CONC2), using a five-point Likert scale from “not concerned” to “very concerned”.

In general, to create a valid Moral Concerns Scale, nomological validity needs to be tested as a third step. Nomological validity is given when the theoretically assumed correlations can be proven statistically [61]. To test the MCS, the question of whether moral concerns really do lead to a readiness to act and no WTA with a price reduction was determined.

4. Results: The Scale Development Process and Validation

4.1. Pilot Study

As a first step, an EFA using IBM SPSS 24 and a Varimax-Rotation was conducted [47]. Three factors could be extracted with a Kaiser-Meyer-Olkin value of 0.921, which explained 65.347% of the total variance. The Cronbach’s alpha of the dimensions was above the threshold of 0.8 and all the items had a factor loading above 0.6, which is quite good and these results are shown in Tables 3 and 4 [47,48,52].

To test the construct validity, a structural equation model was created in SmartPLS 3 based on the EFA and CFA performed. The model consisted of three exogenous constructs (VAL, EMO, and COG), which had a connection to the endogenous construct concern (CONC). Table 3 shows that some items were removed due to plausibility (COG1) or factor loadings that were too low (EMO6 and COG5). One item was added to improve the model fit (COG7). Furthermore, the ACT and WTA constructs were added to test whether or not the theoretical assumption that moral concerns influenced behavior and led to a negative WTA for a product with morally reprehensible npr-PPM at a reduced price was valid, which is statistically provable. The evaluation of the total model was conducted using SRMR to test the convergent validity. The value was less than 0.085, and, thus, it can be assumed that the convergent validity was given. Overall, a good model fit could be achieved with an AVE above 0.5, a CR above 0.6, and factor loadings above 0.7.

To test the discriminant validity, an HTMT was used, and values less than 0.895, which were good, indicated a discriminately valid model [52]. Furthermore, the VIF values were <5 and, thus, multicollinearity probably did not affect the results negatively. Table 3 provides an overview of the validation of the models. The moral concerns (CONC) influence the ACT with a value of 0.632 and explained 40% of the variance, which can be interpreted as high, and, thus, the assumed connection can be confirmed. Furthermore, moral concerns influence the WTA negatively (−0.5) and could explain 25% of the variance, which is also a good result and an indicator for nomological validity. The MCS, based on the data of the pilot study, shows convergent, discriminant, and nomological validity.

Table 3. The results of the factor analysis of VAL, EMO, COG, and ACT.

		Battery Hens			Seal Hunting			Child Labor		
		Pilot Study (n = 202)		Representative Study (n = 1009)		Representative Study (n = 501)		Representative Study (n = 508)		
		EFA	CFA	CFA		CFA		CFA		
Values (VAL)		$\alpha = 0.910$ $\gamma = 8.429$	AVE = 0.655 CR = 0.930	$\alpha = 0.895$ AVE = 0.656 CR = 0.920	$\alpha = 0.893$ AVE = 0.655 CR = 0.919	$\alpha = 0.931$ AVE = 0.548 CR = 0.878				
		$\mu^1 (\delta)$	λ	λ	$\mu^1 (\delta)$	λ	$\mu^1 (\delta)$	λ	$\mu^1 (\delta)$	λ
VAL ₁	I consider keeping laying hens in battery cages as disrespectful to hens. [I consider seal hunting disrespectful to seals] [I consider child labor disrespectful to children]	1.89 (1.05)	0.787	0.813	1.80 (1.01)	0.824	1.93 (1.06)	0.829	1.75 (0.95)	0.835
VAL ₂	I am convinced that we are obligated to treat hens [seals/children] fairly.	1.72 (0.93)	0.773	0.813	1.73 (0.86)	0.802	1.76 (0.62)	0.688	1.43 (0.71)	0.622
VAL ₃	I consider it unjust to keep egg-laying hens in battery cages. [I consider it unjust to the seals to kill them] [I consider it unjust to children that they have to work]	1.98 (1.12)	0.766	0.768	1.73 (0.86)	0.816	1.95 (1.08)	0.829	1.74 (0.89)	0.852
VAL ₄	I feel sorry for the egg-laying hens in battery cages. [I feel sorry for the seals which are hunted for fur, meat, and oil products] [I feel sorry for the kids who have to work]	1.71 (0.91)	0.758	0.864	1.69 (0.91)	0.817	1.81 (0.97)	0.855	1.72 (0.88)	0.771
VAL ₅	I have a problem with battery cages [seal hunting/child labor] due to the fact that it is not a fair deal to the animals [children].	2.01 (1.07)	0.735	0.833	1.93 (1.05)	0.820	1.97 (1.07)	0.856	1.85 (1.02)	0.691
VAL ₆	Battery cages constitute disrespectful handling of animals to me.	1.83 (0.03)	0.731	0.813	-	-	-	-	-	-
VAL ₇	Egg-laying hens must not be kept in battery cages.	1.89 (1.04)	0.687	0.740	-	-	-	-	-	-
VAL ₈	It is alright to keep egg-laying hens in battery cages. [It is alright to kill seals to use them] [It is alright that children work]	-	-	-	1.77 (0.90)	0.780	1.89 (1.01)	0.786	2.02 (0.90)	0.637
Emotions (EMO)		$\alpha = 0.906$ $\gamma = 1.811$	AVE = 0.760 CR = 0.940	$\alpha = 0.914$ AVE = 0.744 CR = 0.936						
		$\mu (\delta)$	λ	λ	$\mu (\delta)$	λ	$\mu (\delta)$	λ	$\mu (\delta)$	λ
EMO ₁	Keeping egg-laying hens in battery cages infuriates me. [Seal hunting/child labor infuriates me]	2.33 (1.09)	0.841	0.920	2.30 (1.13)	0.874	2.03 (1.04)	0.915	2.04 (1.02)	0.898
EMO ₂	I am ashamed of Germany, when I read or see something about battery cages in Germany.	2.46 (1.11)	0.814	0.848	-	-	-	-	-	-

Table 3. Cont.

		Battery Hens			Seal Hunting			Child Labor		
		Pilot Study (n = 202)		Representative Study (n = 1009)	Representative Study (n = 501)		Representative Study (n = 508)			
EMO ₃	The fact that there are still battery cages [seal hunting/child labor] makes me mad.	2.23 (1.03)	0.803	0.916	2.17 (1.08)	0.904	2.04 (1.08)	0.921	1.97 (0.97)	0.900
EMO ₄	Thinking about battery cages [seal hunting/child labor] makes me feel contempt toward the producers.	2.17 (1.03)	0.784	0.879	2.08 (1.06)	0.856	1.89 (1.00)	0.883	1.82 (0.98)	0.830
EMO ₅	It annoys me when I see how many consumers thoughtlessly buy battery eggs [seal products/products created with child labor].	2.25 (1.07)	0.696	0.790	2.23 (1.11)	0.839	1.91 (1.00)	0.850	2.04 (1.01)	0.811
EMO ₆	Battery cages can pose dangers to consumers.	2.40 (0.98)	0.631	-.2	-	-	-	-	-	-
EMO ₇	It is disappointing that there are still battery cages.	-	-	-	2.08 (1.06)	0.856	1.84 (0.95)	0.903	1.72 (0.85)	0.834
	Cognitive assessment (COG)		$\alpha = 0.806$ $\gamma = 1.523$	AVE = 0.601 CR = 0.858		$\alpha = 0.865$ AVE = 0.711 CR = 0.908		$\alpha = 0.772$ AVE = 0.686 CR = 0.868		$\alpha = 0.812$ AVE = 0.639 CR = 0.876
		$\mu (\delta)$	λ	λ	$\mu (\delta)$	λ	$\mu (\delta)$	λ	$\mu (\delta)$	λ
COG ₁	I do not want a prohibition of keeping egg-laying hens in battery cages.	3.84 (1.23)	0.755	-	-	-	-	-	-	-
COG ₂	In my point of view, battery cages are not a violation of animal welfare.	4.16 (1.01)	0.710	0.750	-	-	-	-	-	-
COG ₃	I think battery hens in cages [working children] can feel well.	3.75 (1.69)	0.678	0.754	3.96 (1.02)	0.844	-	-	3.49 (1.04)	0.806
COG ₄	If people want to buy cheap battery eggs [seal products/products created with child labor] they should have the opportunity to do so.	3.65 (1.07)	0.669	0.807	3.77 (1.10)	0.824	4.04 (1.03)	0.846	4.12 (0.97)	0.757
COG ₅	I can buy battery eggs with a clear conscience.	4.14 (0.89)	0.629	-	-	-	-	-	-	-
COG ₆	Keeping hens in battery cages is legitimate.	4.09 (1.05)	-	0.788	-	-	-	-	-	-
COG ₇	Under specific conditions, battery cages [seal hunting/child labor] for laying hens are [is] responsible.	-	-	-	3.69 (1.11)	0.858	3.24 (1.22)	0.799	3.47 (1.14)	0.806
COG ₈	In my opinion, the injustice of battery cages for laying hens [seal hunting/child labor] are overestimated by animal [human] rights organizations.	-	-	-	3.92 (0.99)	0.846	3.95 (1.00)	0.839	4.14 (0.88)	0.827
	Readiness to act (ACT)			AVE = 0.610 CR = 0.861		$\alpha = 0.864$ AVE = 0.711 CR = 0.907		$\alpha = 0.882$ AVE = 0.736 CR = 0.918		$\alpha = 0$ AVE = 0 CR = 0.
		$\mu (\delta)$	λ		$\mu (\delta)$	λ	$\mu (\delta)$	λ	$\mu (\delta)$	λ
ACT ₁	If people in my environment incite me, I take action against battery cages [seal hunting/child labor].	2.73 (1.11)	0.762		2.79 (1.23)	0.858	2.85 (1.22)	0.891	2.63 (1.15)	0.878

Table 3. Cont.

		Battery Hens		Seal Hunting		Child Labor			
		Pilot Study (<i>n</i> = 202)		Representative Study (<i>n</i> = 1009)		Representative Study (<i>n</i> = 501)		Representative Study (<i>n</i> = 508)	
ACT ₂	I would vote for a law that forces farmers to keep their egg-laying hens in an animal friendly way.	1.75 (0.99)	0.674	-	-	-	-	-	-
ACT ₃	I like to inform people that laying hens are still kept in cages. [I like to inform people that there is still seal hunting/child labor].	2.75 (1.18)	0.828	3.03 (1.16)	0.830	3.16 (1.23)	0.843	2.78 (1.13)	0.814
ACT ₄	I am generally willing to promote the abolition of battery cages [seal hunting/child labor].	2.53 (1.02)	0.848	2.70 (1.11)	0.881	2.70 (1.18)	0.882	2.45 (1.02)	0.888
ACT ₅	I am supporting animal [human] rights organizations who act for an abolition of battery cages [seal hunting/child labor].	-	-	3.23 (1.19)	0.801	3.26 (1.22)	0.815	3.06 (1.25)	0.729

¹ μ = Mean (Likert Scale 1 = totally agree to 5 = totally disagree); δ = Standard derivation; EFA = Exploratory factor analysis; CFA = Confirmatory factor analysis; α = Cronbach's alpha; γ = Eigenvalue; AVE = Average Variance Extracted; CR = Composite Reliability; λ = factor loading; ² Item rejected; bold letters indicate the items of the final MCS.

4.2. Representative Study

The first results of the pilot study showed the internal and construct validity of the initial MCS. As an additional validation process (and according to Churchill (1979) [47]), further measurements are necessary [42]. Thus, to confirm the three-dimensionality of the MCS, a model for each example (battery hens in cages, hunting of seals, and the use of child labor) was performed using SmartPLS 3 (see Figure 1). For the final scale, some items were adjusted for several reasons. The EMO2, ACT2, and VAL6 items were deleted due to content similarities. COG2 was deleted due to low factor loadings in the model. The VAL1 item (“In my view keeping laying hens in battery cages is disrespectful to hens”) was replaced with “I consider keeping laying hens in battery cages as disrespectful to hens”. COG3 was also modified from “I do not think that animals in cages are necessarily suffering” into “I think battery hens in cages can feel well”, due to the fact that a double negative may confuse participants. Furthermore, this item was not included in the seal hunting part: it makes no sense to ask participants about the well-being of animals for slaughter. Moreover, the item VAL8 (“It is alright to keep egg-laying hens in battery cages”) was added but was used in the model in a recoded form. EMO5 was adjusted, with the word “eat” being replaced by “buy” (“It annoys me when I see how many consumers thoughtlessly buy battery eggs”). ACT5 (“I am supporting animal [human] rights organizations who act for an abolition of battery cages [seal hunting/child labor]”) and COG7 (“Under specific conditions battery cages [seal hunting/child labor] for laying hens are [is] responsible”) were also added due to content issues and to improve the model fit.

The remaining 20 items of the final MCS achieved satisfactory results (Cronbach’s alpha > 0.7; AVE \geq 0.5; CR > 0.7; SRMR < 0.08; HTMT < 1.00), as shown in Table 4 [52,56,62]. Figure 1 shows the final MCS using the case of battery hens as an example. However, an identical model with similar structure, weighting, and loadings could be created for all three cases (Tables 3 and 4). In all the models, the values (VAL) have an effect on the participants’ cognitive assessment and emotions and, therefore, have an indirect influence on the moral concerns of participants.

Based on the path coefficients and the R^2 values, the theoretical relationship of concern with the construct of VAL, COG, and EMO can be confirmed. Furthermore, concern positively influences the ACT ($\beta = 0.638$) and has a negative influence of the WTA with a price reduction ($\beta = 0.502$). Therefore, the results of the representative study show that the MCS is reliable, convergent, and has a valid construct.

Table 4. An overview of the reliability and validity criteria of the MCS.

Criteria	Reference	Pilot Study	Representative Study	Representative Study	Representative Study
Internal consistency and reliability	-	Battery hens		Seal hunting	Child labor
Indicator reliability (λ)	>0.4	CONC > 0.7 VAL > 0.7 EMO > 0.7 COG > 0.7 ACT > 0.6	CONC > 0.9 VAL > 0.7 EMO > 0.8 COG > 0.8 ACT > 0.8	CONC > 0.9 VAL > 0.7 EMO > 0.8 COG > 0.7 ACT > 0.8	CONC > 0.9 VAL > 0.6 EMO > 0.8 COG > 0.7 ACT > 0.7
Cronbach’s alpha (α)	>0.7	CONC: 0.878 VAL: 0.912 EMO: 0.920 COG: 0.779 ACT: 0.787	CONC: 0.896 VAL: 0.895 EMO: 0.914 COG: 0.865 ACT: 0.864	CONC: 0.934 VAL: 0.893 EMO: 0.937 COG: 0.772 ACT: 0.881	CONC: 0.859 VAL: 0.831 EMO: 0.908 COG: 0.812 ACT: 0.849
Convergent validity					
Composite Reliability (CR)	>0.7	CONC: 0.908 VAL: 0.930 EMO: 0.940 COG: 0.857 ACT: 0.861	CONC: 0.951 VAL: 0.920 EMO: 0.936 COG: 0.908 ACT: 0.907	CONC: 0.968 VAL: 0.919 EMO: 0.952 COG: 0.868 ACT: 0.918	CONC: 0.933 VAL: 0.878 EMO: 0.932 COG: 0.878 ACT: 0.898

Table 4. Cont.

Criteria	Reference	Pilot Study	Representative Study	Representative Study	Representative Study
Average Variance Expected (AVE)	≥0.5	CONC: 0.623 VAL: 0.655 EMO: 0.760 COG: 0.601 ACT: 0.610	CONC: 0.906 VAL: 0.656 EMO: 0.744 COG: 0.711 ACT: 0.711	CONC: 0.938 VAL: 0.655 EMO: 0.800 COG: 0.686 ACT: 0.736	CONC: 0.875 VAL: 0.548 EMO: 0.732 COG: 0.639 ACT: 0.688
SRMR	<0.08	0.085	0.053	0.053	0.065
Discriminant validity					
HTMT	<1.00	Overall ≤ 0.895	Overall ≤ 0.895	Overall ≤ 0.895	Overall ≤ 0.873
Variance Inflation Factor (VIF)	<5.00	Overall < 1.81	Overall < 3.45	Overall < 3.54	Overall < 2.65

Source: Own calculation in accordance to Henseler et al. (2015a) [52]. SRMR = standardized root mean square residual; HTMT = heterotrait-monotrait ratio of correlations.

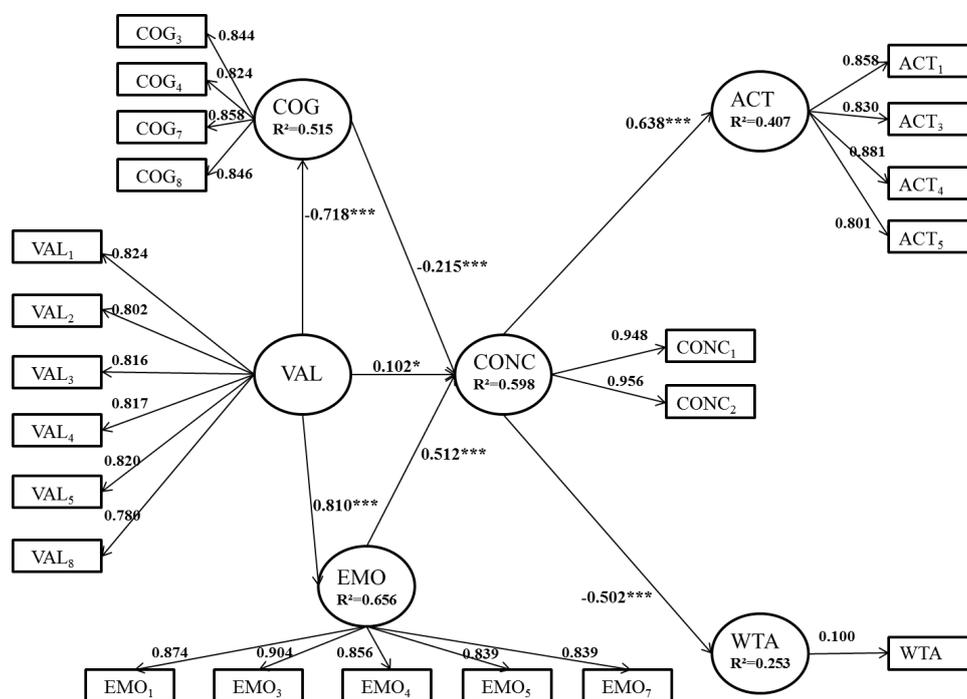


Figure 1. The model of the Moral Concerns Scale for the case of battery hens in the representative study. Source: Own elaboration; after Bootstrapping with 500 subsamples all values are significant at the 0.001 level (***).

Furthermore, Table 5 provides an overview of how concerned participants were regarding the three case studies: battery hens, seal hunting, and child labor. Therefore, the top boxes of the approval ratings (agree and totally agree) of the dimensions EMO, VAL, COG, ACT, and WTA were generated to compare the three different case studies easily. Participants in the representative study rated the emotional aspects (EMO) much higher in the case of child labor compared to battery hens and seal hunting. However, the items concerning values (VAL) regarding keeping battery hens received a higher degree of agreement than seal hunting or child labor. The same tendency can be observed regarding the cognitive assessment (COG) for battery hens. Furthermore, the majority of the participants were not willing to accept morally contested products (battery eggs, seal products, child produced chocolate) with a price reduction. So, 76% chose the option “I would not buy child produced chocolate, regardless of the cost”. Overall, participants were concerned about all three cases, but showed differences depending on the process and production methods.

Table 5. The measurements of the moral concerns.

	Emotions (EMO)	Values (VAL)	Cognitive Assessment (COG)	Readiness to Act (ACT)	No Willingness to Accept (WTA) ¹
Battery eggs (<i>n</i> = 1009)	66.5% ²	81.3%	65.1%	36.4%	70.2%
Seal hunting (<i>n</i> = 501)	75.3%	70.7%	62.9%	34.9%	87.0%
Child labor (<i>n</i> = 509)	84.5%	74.0%	62.7%	40.4%	76.4%

Source: Own calculation; ¹ Share of participants who chose the item “I would not buy products [battery eggs/seal products/child produced chocolate] regardless of the price.” ² Top boxes of agreement (*totally agree* and *agree*).

5. Conclusions

Until now, there has been a lack of clarity about when production and npr-PPM really cause moral concerns and how strong they are [63]. Moreover, there is no valid measurement to quantify moral concerns with respect to npr-PPM, which cannot be detected in the product itself. Against this background, we developed an MCS and tested it in a pilot study (*n* = 202) and a representative study (*n* = 1009) with German citizens. The scale consists of several dimensions including personal values (VAL), emotional reactions (EMO), and a cognitive assessment (COG) of the problem, which leads in the model to a readiness to act (ACT) and no WTA with a price reduction, see Figure 2.

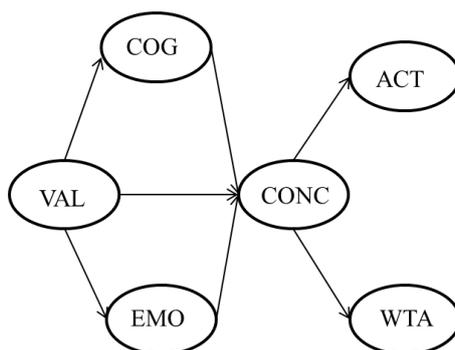


Figure 2. The structure of the Moral Concerns Scale. Source: Own elaboration.

The results show that the scale can be used to quantify public moral concerns regarding animal welfare issues. Moreover, the study of child labor indicated that the scale is applicable to other sustainability and morally reprehensible topics. In principle, the items of the MCS are designed to be applied in various fields that could raise public moral concerns. The scale in both studies—pilot and representative—was reliable, convergent, and the construct was valid.

5.1. Managerial and Theoretical Implications

Against the background of the initially mentioned European Communities—Measures Prohibiting the Importation and Marketing of Seal Products (EC-Seal Products) case, politicians could use the MCS to implement or justify higher sustainability standards, in particular, by differentiating legitimate moral concerns from protectionism. Furthermore, it could be used to support the WTO with reliable data in order to achieve mandatory labeling for products that cause high degrees of public moral concern. As one consequence, free trade and the WTO can regain the trust and support of the wider public in implementing ethical concerns in international trade policies.

Moreover, research on the degree of public moral concerns is useful to understand citizens regarding their consciousness to implement and adjust CSR-strategies in companies. Thus,

the results of using the scale could be the basis for a variety of marketing strategies or product development decisions.

Overall, the results indicate that participants in the pilot study and in the representative study were highly concerned about battery hens, the killing of seals, and the use of child labor. If it is not possible to integrate such concerns into the WTO import and labeling restrictions, free trade threatens to lose its social legitimacy.

5.2. Limitations and Further Research Directions

In the survey, only German citizens were taken into account using German items. It is necessary to conduct such a study in different countries to further validate our estimations. Therefore, the items should be translated into different languages and used in several countries to strengthen the scale and achieve a wider benchmark. Furthermore, other npr-PPM need to be tested to compare how participants rate different npr-PPM and determine their level of concern.

The objective was to develop a trustworthy, science-based scale for the measurement of public concerns regarding sustainability topics that can be used for the CSR-management of companies or may offer opportunities for mandatory labeling and import restrictions. However, the scale was tested with two examples of animal welfare and with child labor as highly debated social topics. Therefore, the scale needs further tests and adjustments to become a valid tool to measure public moral concerns regarding sustainability standards from other sectors and with lower awareness. It is also necessary, among other things, to define the concrete limits beyond which the massive moral concerns should be assumed.

Finally, the proposed scale is only one step towards implementing npr-PPM in the WTO regime. Another important aspect is, for example, the clear definition of the production processes. For example, the EU has banned conventional battery cages of chickens, but not so-called enriched cages (while in Germany, both forms of production will be banned from 2025 [27]). In addition, a decision must be made on the choice of the appropriate instrument, for example, whether mandatory labeling or import restrictions are suitable.

Author Contributions: Winnie Isabel Sonntag and Achim Spiller conceived and designed the experiments; Winnie Isabel Sonntag performed the experiments; Winnie Isabel Sonntag and Achim Spiller analyzed the data; Winnie Isabel Sonntag and Achim Spiller contributed reagents/materials/analysis tools; Winnie Isabel Sonntag wrote the paper. Winnie Isabel Sonntag and Achim Spiller discussed the results and the conclusion.

Acknowledgments: The project was supported by funds from the Federal Ministry of Food and Agriculture (BMEL) based on a decision of the Parliament of the Federal Republic of Germany via the Federal Office for Agriculture and Food (BLE) under the innovation support program.

Conflicts of Interest: The authors declare no conflict of interest.

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