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Abstract:	<p>Traditionally, in Spain bullfighting represents an ancient and well-respected tradition and a combined brand of sport, art and national identity. However, bullfighting (BF) has received considerable criticism from various segments of society, with the concomitant rise of the animal rights movement. The paper reports a survey of the Spanish citizens using a face-to-face survey during January 2016 with a total sample of 2522 citizens (1256 men and 1266 women). The survey asked about degree of liking and approving; culture, art and national identity; socio-economic aspects; emotional perception and animal welfare. The hypothesis proposed that the perception of bullfights may be affected by gender, age, occupation, origin and nationality of the persons surveyed. The hypothesis was confirmed. The majority of citizens surveyed do not like bullfights and great majorities do not attend or watch such events. Two extreme clusters were described: one representing favorable attitude towards bullfighting and other against bullfighting. The proportion of indifferent persons was important. Women and young people showed a more favorable attitude towards animal welfare issues associated with these events. Rural people were more accepting bullfights than urban people. Students were more anti-bullfight than those in other occupations. Additionally, technical economic factors made people favor more bullfights. The growth of claim against bullfights establishes an element of a far more multifaceted phenomenon that animal cruelty per se and support of a new paradigm called social change in countries as Spain.</p>

Animal welfare, national identity and social change: Attitudes and opinions of Spanish citizens towards bullfighting

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23 **Introduction**

24 The strong social claim in favour of animal welfare has produced important changes in the European
25 legislation controlling the different human-animal relationships (María, 2006). This concern is not new
26 and has been addressed by several philosophers (Singer, 1977; Rolston, 1989; Sandoe et al., 1997; Regan,
27 2004; Vilmer, 2013). In Europe, the policies and regulations established are primarily welfare-oriented,
28 with less noticeable activism for animal rights *per se* than is observed in the United States (Guither and
29 Curtis, 2002). However, millions of consumers in Europe and the North America are allowing their
30 concern for animal welfare/rights to transform their diets and lifestyles (Braunsberger and Buckler, 2011).
31 The policy literature has responded to these concerns by suggesting a variety of policy instruments to
32 policy makers (Ingenbleek et al., 2012). The aim of all animal welfare policies is to prevent suffering or,
33 when an animal has to suffer in some way, to minimize it as much as possible. One of the priorities of the
34 EU authorities is to regulate the protection of the animal at the moment of slaughter and during all the
35 pre-slaughter handling. European rules state that no animal should be slaughtered without proper and
36 effective stunning using approved methods in order to avoid the perception of pain and to minimize the
37 stress prior to and during slaughter.

38
39 However, the Council Regulation (EC) 1099/2009 to protect animals at slaughter includes some
40 exceptions related to cultural or religious reasons. One of these exceptions concerns countries where
41 popular events use animals as a spectacle. The bullfight as a public spectacle is popular throughout Spain,
42 Portugal, Southern France and many Latin American countries (Campbell, 1932; Saumade, 1994;
43 Colomb, 2005). However, it is in Spain alone where these events have attained notable political, cultural
44 and symbolic importance (Brandes, 2009), and inclusive is part of the national identity -i.e. Osborne bull-
45 (Johnson and Leatherman, 2005; Santos and Trillo-Santamaría, 2017). The study of attitudes is interesting
46 because of the possible influence they have on human behavior (Kellert, 1996; Webb; Sheeran, 2006.
47 There is a notable variation in human attitudes towards animals and the reasons for that variation should
48 be investigated (Batt, 2009; Fernie et al., 2012; Spooner et al., 2012). A review of the sociological and
49 anthropological studies defines bullfighting as a class of celebration in which the bull is sacrificed by the
50 bullfighter (De Solis, 1992). Bullfighting dates back to the beginnings of Mediterranean culture
51 (Younger, 1976; Rice, 1998).

52
53 Culture is a complex concept that includes the knowledge, beliefs, art, morality, law, customs and any
54 habits and abilities acquired by humans as members of society (De Lora, 2011). The cultural analysis of
55 bullfighting is described by (Driesen, 1982; Pitt-Rivers, 1993; Graña et al., 2004). In Spain, festivals are
56 considered important markers and celebrations of ethnic/cultural identity (Douglas, 1991). Due to the
57 deeply rooted traditions of these events in the Spanish population and the growing concern about animal
58 welfare recently observed, especially among young people (María, 2006; Miranda-de la Lama et al.,
59 2013), we decided to conduct a survey soliciting people's opinions of these events related to bullfighting
60 named generically as "taurine" events. The survey mainly concerned bullfighting, and asked about
61 different aspects (blocks/items) related to: 1. Socio-demographic information; 2. Liking and approving
62 (*afición*); 3. Culture, art and identity; 4. Socio-economic aspects; 5. Anthropocentric emotional perception

63 and, 6. Animal welfare. According to our hypothesis, the perception of this type of event may be affected
64 by the gender, age, occupation, origin (rural or urban) and nationality of the persons surveyed. If this
65 effect occurs, it should be possible to detect clusters in relation to their perception of (in favor or against)
66 bullfighting in Spain, using the city of Zaragoza as a model. The knowledge of these clusters will be
67 useful to develop strategies to address such a problematic issue in Spain, informing people about the
68 consequences that bullfighting events may have on the welfare of animals.

69

70 **Material and methods**

71 A questionnaire was drawn up following a *Likert-type* scale attitude assessment model (Mazas et al.,
72 2013). Questionnaire-based personal surveys were carried out on a cross section sample of 2522 persons
73 in the city of Zaragoza, capital of the autonomous region of Aragón (old Kingdom of Aragón). Zaragoza
74 is a city of half a million people, located in north-east Spain, is typically used by social and market studies
75 since the socio-demographic profile of this town is representative of the Spanish Census of Population
76 (Gracia and Zeballos, 2005; María 2006; Gracia, 2013; Miranda-de la Lama et al., 2013). The pollsters
77 work in groups of 2–3 veterinary freshman students of Veterinary Medicine, enrolled on our Animal
78 Welfare course.

79

80 *Survey*

81 Before the final questionnaire, in-depth interviews were carried out using draft questions, with the
82 participation of the different people we assumed we would later have in the real survey. Based on these
83 results we designed the final questionnaire. The socio-demographic characteristics of the survey of 2522
84 people were 1256 (49.8%) men and 1266 (50.2%) women. In terms of age, 22.5% were between 18 and
85 30 years old; 24.3% were between 31 and 45 years old; 26.8% belonged to the 46 to 60 years old group;
86 and the remaining 26.5% were over 60 years of age. In relation to the origin of the people surveyed,
87 81.5% were city inhabitants, while the remaining 18.5% came from rural villages but lived in the city. We
88 also categorized the sample by occupation and the results were as follows: 16.5% retired people, 10.9%
89 students, 55.4% active workers, 7% unemployed, 7.1% housewives and 3.9% reported no occupation. Of
90 the total number of persons surveyed, 95.9% were Spanish and 4.1% were foreign.

91

92 The survey consisted of six sections. The first section included the socio-demographic characteristics of
93 the respondents. The second section included three questions to evaluate attitudes about liking (*afición*)
94 bullfights and similar events (2.1 *I like bullfights*; 2.2 *I regularly attend the bullfighting arena*; and 2.3 *I*
95 *watch bullfights on TV*). In the third section respondents were asked about aspects relating to culture, art
96 and identity, including three more statements (3.1 *Bullfighting should be declared a cultural heritage of*
97 *Spain*; 3.2 *Bullfighting is an art form and should be protected*; and 3.3 *I like bullfighting as a symbol of*
98 *Spanish identity*). The fourth section asked about the socio-economic aspects of the BF in general, and
99 included five more questions (4.1 *The holidays of my town would be less attractive and entertaining*
100 *without bulls*; 4.2 *Without bullfights the Lidia cattle breed and its ecosystem (the Dehesa) would*
101 *disappear*; 4.3. *The banning of bullfights would mean the loss of many jobs*; 4.4 *Without bullfights the*
102 *tourism industry would be damaged*; and 4.5 *Spain will be compelled to ban bullfights by European law*).

103 The fifth section, relating to the (anthropocentric) emotional perception of this type of event, included
104 three questions (5.1 *The Lidia bull is a brave and noble animal born to die in the bullfighting arena*; 5.2
105 *The bull does not suffer in the bullfighting arena because of its instinct*; and 5.3 *If the bullfights are*
106 *banned the species will become extinct*). Finally, the sixth part of the survey investigated the perception of
107 animal welfare including three questions (6.1 *Cultures evolve and tend to have more respect for animals*;
108 *6.2 I suffer when I see a bull in the bullfighting arena used for the entertainment of people*; and 6.3 *I*
109 *agree with the ban on bullfights as is already the case in other countries*).

110

111 In all sections, the level of agreement to the question or statement proposed was assessed using an ordinal
112 scale from 1 to 5 points, 1 being very low agreement and 5 being very high agreement. As regards the
113 pro-bullfight or anti-bullfight attitude of the respondents, the interpretation of the score is different
114 between sections. A high score in sections 2, 3, 4 and 5 should be interpreted as a pro-bullfight attitude,
115 while a high score in the last section (6) should be considered as an anti-bullfight attitude.

116

117 *Statistical analysis*

118 All statistical analyses were carried out with the software Package SPSS, Version 15.0. As an initial
119 measurement, preliminary analysis was performed to describe the sample and the socio-demographic
120 results. Preliminary univariate analyses were performed for all the variables studied to understand their
121 individual performance and to detect outliers. An analysis of mean differences was realized between the
122 population groups with respect to each of the six categories of questions. The bivariate analysis was used
123 to observe the significant changes in the relationship among the patterns of variables in the different
124 groups to detect specific differences. Univariate analyses were used to develop frequency tables and
125 percentages and their corresponding bar graphs. Bivariate analyses were used to develop contingency
126 tables with their respective χ^2 square test, Mann–Whitney test and Kruskal–Wallis test. In addition, the
127 Spearman correlation (Spearman’s rho) was calculated, which is a non-parametric test appropriate for this
128 type of variable. As a main task of exploratory data mining, we realized a cluster analysis to group
129 respondents in such a way that persons in the same group (called a cluster) are more similar (in the sense
130 of pro- or anti-bullfight attitude) to each other than to those in other groups.

131

132 **Results**

133 Generally, the proportion of people who do not like BF is significantly higher than those who like this
134 type of event (49% vs 39%). These differences are more evident in women and young people ($p \leq 0.01$).
135 When we ask whether this liking is expressed by attending live bullfights or other live BF, the proportion
136 of people who do not participate is much higher (77% vs 23%). This proportion is smaller when we ask
137 whether they watch BF on TV (58% vs 32%).

138

139 *Overall data*

140 As regards questions grouped as *culture, art and identity*, the proportion of people who agree to having
141 BF as a Spanish cultural heritage is equilibrated (40% vs 38%), with 22% of respondents indifferent.
142 Women and the young constitute a higher proportion. The figure is very similar when we ask about BF

143 being an artistic expression. A majority of respondents agree that bullfighting is a symbol of Spanish
144 national identity (48% vs 35%). This majority is smaller among women and the young and the proportion
145 who are indifferent is relatively high (18%).

146

147 In relation to the *technical-economic* aspects of the survey, a majority of respondents (44.5%) think that
148 these types of events, including bullfights, are very popular and a source of entertainment during their
149 city/village holidays. In the case of women, this proportion is significantly ($p \leq 0.01$) lower (39%). A
150 majority of respondents (63.5%) agree that the prohibition of bullfights would lead to the extinction of the
151 Lidia breed and the disappearance of the *Dehesa* ecosystem (natural for this breed). In the same way,
152 majorities of people (61%) think that the prohibition of bullfights would cause a major loss of jobs in the
153 BF industry in Spain. However, when we ask whether this prohibition would negatively affect the tourism
154 industry in Spain, the proportion of people who agree is significantly lower (42%), in contrast to the 39%
155 who disagree ($p \leq 0.01$). The same division of opinion is observed when we mention that prohibition could
156 be imposed by the European Union (EU) (36% yes vs 33% no). This statement shows a high proportion of
157 neutral opinions (30%). In this segment (technical-economic) there is more agreement between sexes and
158 between age classes.

159

160 The *emotional perception* block of questions shows that approximately half of the respondents disagree
161 with the affirmation that the Lidia bull is a “noble” animal born to die in the bullfighting arena. This
162 proportion of disagreement is significantly higher among women and young people. The proportion of
163 persons (68%) who disagree with the statement that the Lidia bull does not suffer in the arena due to its
164 instinct is even higher, and this disagreement is also higher among women and young people. However,
165 half of respondents think that the prohibition of bullfights would represent the extinction of the species,
166 clearly confounding breed with species.

167

168 In the *animal welfare perception* segment, 70% of persons surveyed agree that cultures evolve and tend to
169 show a higher level of respect for animals (only 15% disagree). A majority of respondents (52%) feel
170 sorrow when they see a bull in the arena suffering for the entertainment of people; this is even higher
171 among women and young people ($p \leq 0.01$). However, when we ask whether they agree with the abolition
172 of bullfights, the majority (50%) disagree, and 35% are in favor of the ban. Again, the agreement that
173 bullfighting should be abolished is higher ($p \leq 0.01$) among women and especially young people (>50%).

174

175 *Blocking variable analysis*

176 Firstly, we analyze the mean differences between the population groups (according to their profession or
177 occupation) of the overall sample (Table 1). The results show that there are significant ($p < 0.0001$)
178 differences in all categories with χ^2 values over 100 in all the categories with the exception of *Animal*
179 *Welfare* category that presents a not so high values (68), but always highly significant. Once it has been
180 proven that there are differences between the blocks, it is necessary to perform the bi-variant comparison
181 for the different grouping variables analyzed. The contrast analysis between grouping variables gender,
182 origin, nationality age, age and occupation by blocking variables of *liking, art and identity, technical*

183 *economic, emotional perception* and *animal welfare* blocks, are presented in Figures 1 (A, B and C) and
184 Figure 2 (A and B), respectively. As we mention above, scoring high in the section of *liking, art and*
185 *identity, technical economic* and *emotional perception* is interpreted as a pro-bullfight attitude. A high
186 score in the last section (*animal welfare*) should be considered as an anti-bullfight attitude.

187

188 The comparison between gender class is highly significant for all blocks (U Mann–Whitney $\rho=0.000$), the
189 mean for men being higher than for women for the categories of *liking, art and identity, technical*
190 *economic* and *emotional perception*. The women present higher mean values for the *animal welfare*
191 block. With regard to the age of the persons surveyed, there are significant differences between younger
192 people below 31 years old and those in the age range 31 to 45 years old, for all categories (with the
193 exception of the *animal welfare* block). When we compare the same class of younger people with older
194 people, but still under 61 years old, there are differences in all categories (U Mann–Whitney $\rho=0.000$). In
195 this way, the people of the age class ranging from 46 to 60 years old grade higher (U Mann–Whitney
196 $\rho=0.000$) in the categories of *liking, art and identity, technical economic* and *emotional perception*.
197 However, in the category of animal welfare, the younger group score higher (U Mann–Whitney $\rho=0.031$)
198 than the older class of 46–60 years old. When we compare young people with persons over 60, we find
199 that old people also grade higher (U Mann–Whitney $\rho=0.000$) in all categories, except for *animal welfare*.
200 In this case, the relation is the opposite (higher in young people). When we compare the two medium age
201 classes (31–45 vs 46–60), no significant differences are found (U Mann–Whitney $\rho=0.05$) in any of the
202 blocks analyzed. However, there are significant differences for the categories of *liking, art and identity,*
203 *technical economic* and *emotional perception* (higher in the upper class). This comparison for the *animal*
204 *welfare* block shows opposite results with higher values in the lower category (U Mann–Whitney
205 $\rho=0.000$). Significant differences are observed for all categories (except *animal welfare*) with higher
206 marks in the upper class (U Mann–Whitney $\rho=0.000$). This comparison for the *animal welfare* block
207 shows mean values higher in the 45–60 class.

208

209 With respect to occupation, significant differences exist between retired people and students (U Mann–
210 Whitney $\rho=0.000$) in all categories, the means for retired people being higher in all the categories, with
211 the exception of the questions related to the *animal welfare* block, in which case the students score higher.
212 We also find significant differences (U Mann–Whitney $\rho=0.000$) for all categories between retired people
213 and active workers, with higher scores for retired people in all categories except for the *animal welfare*
214 block, in which case the active workers score higher. In the same way, there are significant differences (U
215 Mann–Whitney $\rho=0.000$) between retired and unemployed people, with the same trend as in the previous
216 comparison, with a higher score for retired people for all categories, except *animal welfare*. In this case,
217 unemployed people score higher (U Mann–Whitney $\rho=0.003$) than retired. In the comparison between
218 retired people and housewives, we find significant differences (U Mann–Whitney $\rho=0.000$) with higher
219 scores in the retired, except for the *animal welfare* block, in which case housewives grade higher than
220 retired (U Mann–Whitney $\rho=0.000$).

221

222 In relation to student's vs active workers, differences are significant (U Mann–Whitney $\rho=0.000$) with
223 higher scores for active workers in *liking*, *art and identity* and *emotional perception*. On the other hand,
224 comparing students' opinions with unemployed persons', the means are significantly different (U Mann–
225 Whitney $\rho=0.000$) in all categories studied (*liking*, U Mann–Whitney $\rho=0.000$; *art and identity* U Mann–
226 Whitney $\rho=0.001$; *technical economic*, U Mann–Whitney $\rho=0.000$; *emotional perception*, U Mann–
227 Whitney $\rho=0.000$; and *animal welfare*, U Mann–Whitney $\rho=0.024$). These differences show higher mean
228 values in unemployed persons for the first four categories, while for the *animal welfare* block students'
229 score is higher. If we test the pair of means for students and housewives, the latter score higher (U Mann–
230 Whitney $\rho=0.000$) for the first four blocks (*liking*, *art and identity*, *technical economic* and *emotional*
231 *perception*). Again, the relationship is the opposite in the *animal welfare* block (higher in students, but
232 less significant; U Mann–Whitney $\rho=0.027$).

233

234 The active workers score lower than housewives in *art and identity*, *technical economic* (U Mann–
235 Whitney $\rho=0.000$) and *emotional perception* (U Mann–Whitney $\rho=0.009$), while the relationship is the
236 opposite (higher in active workers) for *liking* (U Mann–Whitney $\rho=0.000$), and no significant differences
237 are found in the block of questions related to *animal welfare* (U Mann–Whitney $\rho=0.076$). Finally, when
238 we compare unemployed with housewives, significant differences are detected for the question blocks
239 related to *art and identity* (higher in housewives; U Mann–Whitney $\rho=0.025$), *technical economic* (higher
240 in housewives; U Mann–Whitney $\rho=0.016$) and *emotional perception* (higher in unemployed; U Mann–
241 Whitney $\rho=0.039$). No difference is found in this comparison pair for the other two blocks of questions
242 (*liking* and *animal welfare*) with U Mann–Whitney $\rho=0.715$.

243

244 Regarding the origin of the persons surveyed, people from rural areas score significantly higher (U
245 Mann–Whitney $\rho=0.000$) for categories of *liking*, *art and identity*, *technical economic* and *emotional*
246 *perception*, while people from the city score higher in the *animal welfare* block (U Mann–Whitney
247 $\rho=0.000$). In terms of nationality, the pair test detects significant differences related to the *animal welfare*
248 block with higher scores in foreign people (U Mann–Whitney $\rho=0.000$). However, the other category
249 with significant differences (*liking*) shows higher values in Spaniards (U Mann–Whitney $\rho=0.013$).

250

251 High correlations (Spearman's rho, $\rho 0.000$) are observed between the scoring of the different categories
252 analysed (Table 2). The categories of *art and identity*, *technical economic* and *emotional perception* show
253 positive correlations, indicating that the respondents tend to score in the same way these three categories.
254 However, the category *animal welfare* shows a negative correlation with the others, scoring these
255 questions in the opposite way in relation to the first three sections of the questionnaire. The data confirm
256 the interpretation of the positive scoring tendency of the first four categories (mainly the first three)
257 relating to the respondents' attitude as in favor of TE; and the positive scoring tendency of the *animal*
258 *welfare* category relating to an attitude against the TE.

259

260

261

262 *Cluster/conglomerated analysis*

263 The cluster (conglomerated) analysis is performed to group the population surveyed with respect to the
264 category scoring observed (Table 8). The analysis shows three differentiated groups of respondents. The
265 first group presents high scores in the categories of liking/*afición*, art and identity, technical economic and
266 emotional perception, in concordance with the correlation values presented in the previous table. This
267 group that has more “pro-bullfighting” opinions is named the “pro-bullfight” group (PBF). The other
268 group that shows low scores in the sections mentioned above, but high scores in the animal welfare
269 section, is “anti-bullfight” (ABF). The respondents of the third group show no clear tendency in
270 categories, with intermediate scores for the first and the third category (NBF). The PBF respondents score
271 the first four sections of the questionnaire 322%, 283%, 194% and 264% higher than the ABF, while the
272 ABF score the last section related to animal welfare 172% higher. It should be noted that a high score in
273 the first four sections relating to liking/*afición*, art and identity, technical economic and emotional
274 perception is interpreted as a more favorable position towards bullfighting events (Figure 3). In
275 comparison, a high score in the last section relating to animal welfare issues is interpreted as an
276 unfavorable position towards bullfighting events. The section with the lowest differences between groups
277 relates to the technical economical aspect.

278

279 The associations between groups of the population with respect to the socio-demographic variables
280 considered in the study are presented in Table 9. There is a very strong association (χ^2 156.779; $\rho=0.000$)
281 between the occupation of the respondents and their opinion about the aspects of BF surveyed. A clear
282 association exists between the gender of the respondents and their opinion on bullfighting and bullfight
283 related events (χ^2 44.17; $\rho=0.000$). Overall, women demonstrate a clearly favorable attitude towards anti-
284 bullfight opinion. However, within the cluster of indifferent people there are more women than men, to a
285 degree that we did not expect. There is a significant association between the age of the respondents and
286 their opinion towards BF (χ^2 174.845; $\rho=0.000$). Fewer persons than expected have pro-bullfight attitude
287 in the youngest class (18–30 years old) and more than expected in the oldest class (> 60 years old). For
288 the medium age classes the expected and the observed frequencies do not differ significantly. As
289 described in Table 9, there are more retired persons and housewives than expected with pro-bullfight
290 attitudes. In the case of students and active workers, the tendency is opposite to that of the retired
291 respondents with more persons than expected with anti-bullfight attitudes. No significant effect is
292 observed in employed people. When we consider the origin (urban or rural) of the respondents and the
293 relationship with the cluster obtained, we find a clear association with the opinion expressed (χ^2 45.832;
294 $\rho=0.000$). The analysis demonstrates that there are fewer people of urban origin than expected with a pro-
295 bullfight attitude. The opposite is true in people of rural origin, who demonstrate a more pro-bullfight
296 attitude and have a significantly lower presence within the NBF group. A significant relationship between
297 the opinion about BF and nationality is found, but lower than in the other socio-demographic variables
298 analysed (χ^2 7.705; $\rho=0.001$). In general, Spaniards show a higher presence than expected in the PBF
299 group. In comparison, foreigners show a higher presence than expected in the ABF and NBF groups.

300

301

302 **Discussion**

303 The current study identified the Spanish public's attitude to bullfighting and revealed differences
304 associated with five demographic characteristics (gender, age, occupation, origin and nationality), the
305 overview under which bullfight is carried out, and respondents' bull welfare value orientations. In the
306 recent decades, even though still popular with many hundreds of thousands of followers, it has lost its
307 grip and relevance in a modern society and is even under strong claim by animal rights organizations and
308 some segments of the society (De Brito and Branco, 2009). Its critics complain that animals are wounded
309 during bullfight, or, more fundamentally, that bullfighting violates what some see as a fundamental
310 animal right: freedom from pain, fear and distress. Bullfighting has created continuing controversies,
311 polarizing people in specific geographic locations (as has happened with the activists protests against
312 bullfighting San Isidro's fair in Madrid), in regions (as happened with Spain's constitutional court
313 overturned Catalonia's controversial ban on bullfighting, imposed by the regional government in 2010),
314 and even worldwide (exclusion on the representative list of the intangible cultural heritage of France in
315 2015). The current study is the first to report the attitudes and opinions of Spanish citizens towards
316 bullfighting and their relationship to animal welfare, national identity and social change.

317

318 *Overall data*

319 According to our data, the majority of people surveyed do not like bullfights or similar entertainment, and
320 do not attend or watch on TV such events. This finding is especially evident in women and young people.
321 The results agree with data from an Ipsos MORI public opinion poll commissioned by Human Society
322 International (HSI, <http://www.hsi.org/issues/bullfighting/>). In this survey more than 75% of the
323 population had not attended bullfights in the past five years, only 29% of Spanish people supported
324 bullfighting and 77% agreed that children under 16 should not be allowed to attend. Only 7% of HSI
325 respondents attended a bullfight "about once a year", which is a very low proportion compared with the
326 20 percent who said they visited a museum/art exhibition or theatre visits, or the 12 percent who attended
327 football matches. In a survey by Gallup for a local company in 2008, people were asked about their
328 interest in bullfighting: 69% said they had "no interest" in bullfighting, with a growing tendency across
329 the years (40% in the seventies). The same trend was reported by De Lora (2011) comparing the interest
330 in bullfighting between 1971 (55%) and 2006 (27%), with more interest in people over 64 years
331 compared with people below 25 years old (44% and 18%, respectively). Similarly, in our results, the
332 proportion of people expressing no interest in bullfighting was more significant in women and young. In
333 Spain, ever since the constitution was signed in 1978, there has been a growing interest in outlawing
334 many forms of animal abuse (De Lora, 2011). Animal abuse is formally penalized since 2003, with
335 further restrictions in the new Spanish Penal Code (Organic Law 1/2015, March 30). One of the most
336 recent polls was commissioned by *El País* and carried out by *Metroscopia* immediately after the
337 bullfighting ban was voted through in Barcelona in 2010. In this survey, 57% of people across Spain were
338 against the bullfighting ban in Catalonia, even though 60% of those polled said they did not like
339 bullfighting. In this case, only 37% of Spaniards said they liked bullfighting.

340

341 In our study, a great majority of people do not approve of public funds being used to promote
342 bullfighting. These results are not consistent with the subsidy policy and government spending on these
343 activities (estimated to be approximately 700 MEUR). Spanish farmers receive the handouts for breeding
344 the Lidia animals used in the bullfights as part of the Common Agricultural Policy (CAP). The EU
345 allocates more than 100 MEU of CAP money each year to farmers who use their pastures to rear fighting
346 bulls. It is remarkable that bullfights were recently declared intangible assets of cultural interest (BIC) by
347 the Spanish Parliament. However, more than half a million signatures were presented against that
348 declaration of the parliament, with the support of several international personalities. Therefore, there is
349 controversy surrounding bullfighting with, especially now that some regions have banned bullfighting
350 (Canary Islands). There is also a controversy about the constitutionality of these regional laws. According
351 to Lora (2011), bullfights are not constitutionally prohibited, but neither is it illegal to prohibit them.

352

353 In our study, more than 60% of people did not agree that bullfighting is a Spanish cultural heritage. When
354 the respondent was a woman or young person, the proportion was even higher. Historically, bullfights
355 represented an important source of inspiration for Spanish artists. Goya and Picasso painted pictures
356 inspired entirely by bullfighting. While some artists and writers have defended bullfighting, many others
357 have opposed it. For many artists and politicians, cruelty against animals has no place in a modern
358 society. It is clear that society evolves and some artistic expressions that were naturally accepted decades
359 or centuries ago may not be fully understood nowadays. But we do not have to confuse the supposed "art
360 of bullfighting" with the undisputed "art about the bulls." Some artists have made great works related to
361 bullfights, just as many novelists have gained notoriety describing murders. However, neither provides
362 bullfights or murders with any artistic dignity in and of themselves (Ovejero et al., 2010). Approximately
363 half the respondents agree that bullfighting is a symbol of Spanish national identity. Again, women and
364 the young show a higher level of indifference in relation to this aspect of the survey. Even though our
365 survey asks about "national identity", it is very difficult to define a unique Spanish identity. According to
366 historians bullfighting is certainly one of the best known, although at the same time most controversial,
367 Spanish popular customs (Martín-Ezpeleta, 2012). One aspect that reflects consistency between classes of
368 respondents is related to economic-technical issues. More than 60% of the respondents agree with the
369 statement that a significant number of jobs would be lost if bullfighting is prohibited. This attitude could
370 be explained as a natural response to the very high unemployment rate in Spain currently (>22%). For
371 some lawyers, abolition would prevent the exercise of certain recognized professions and free enterprise
372 or market units (Doménech, 2010). However, the rights invoked are not absolute and animal welfare is a
373 legally protected right. It is therefore possible to maintain the constitutionality of sacrificing certain rights
374 such as artistic freedom or the free exercise of some professions to protect the welfare of animals (De
375 Lora, 2011).

376

377 Another aspect related to the economic importance of BF on the annual festivals of each town or village.
378 More than 44% of respondents believe that their fiestas could lose their appeal without TE. However, of
379 the top 10 tourist attractions in Spain, only one is associated with bullfighting. It is also difficult to know
380 how many people in the audience of a bullfight are tourists. However, there is definitely a strong

381 argument that if international public opinion continues to worsen and tourists stop attending, the number
382 of bullfights may dwindle as organizers find the events no longer economically viable. The proportion of
383 people who are less enthusiastic about bullfighting in their local festival is higher among young people
384 and women who are more attracted by other events associated with other cultural events.

385

386 An aspect with which respondents mostly agree concerns the possible extinction of the Lidia breed. The
387 tendency to fight is a well-known behavior in this cattle breed that has been empirically selected for
388 aggressiveness (Pelayo et al., 2016). There are distinct subpopulations, many of them genetically closed
389 (Silva et al., 2006). The main objective of the production systems using *Lidia* breed is the performance in
390 the bullfight, oriented to a “market” associated with the existence of the bullfights (Menéndez-Buxadera
391 et al., 2017). It is logical to think that if the bullfights disappear the breed will be at risk of extinction (not
392 the species). A majority of the persons surveyed perceive that the *dehesa* ecosystem will be at risk if
393 bullfights are prohibited. The *dehesas* (meadows) of the southwestern Iberian Peninsula are ‘man-made’
394 ecosystems characterized by a savannah-like physiognomy (Lomillos et al., 2012). The profitability of the
395 *dehesas* has been based on the diversity of products and permitted ecological sustainability for many
396 centuries (Lefroy et al., 1993; Chapin, Walker, Hobbs et al., 1997). The number of registered fighting
397 bull brands and properties is more than 1,200 and there are approximately 135,000 breeding cows in
398 540,000 ha of *dehesa*. There are other cattle populations that are also considered “*dehesa*” breeds, in
399 addition to the Iberian Pig and Horses (Martín-Burriel et al., 2007). It is evident that even without the
400 *Lidia* breed, there remain other autochthonous breeds of domestic animals that are part of this ecosystem,
401 which will ensure the survival of the *dehesas* (Lomillos et al., 2013).

402

403 *Gender and age effect*

404 Our survey confirms the hypothesis that the perception of BF is affected by the gender and the age of the
405 respondents. The results indicate that women have greater concern about welfare issues than men. In a
406 Gallup survey commissioned by a local company in 2008, the differences between men and women in
407 relation to interest in BF were remarkable. Women generally have more positive attitudes towards
408 animals than men (Peek et al., 1996; Beardsworth et al., 2002; María, 2006; Miranda-de la Lama, et al.,
409 2017). Moreover, more men than women support animal research, hunt animals for recreation and engage
410 in animal cruelty (Lauber and Brown, 2000). In contrast, women nearly always outnumber men at animal
411 rights demonstrations (Herzog, 2007). Gender differences result from the interactions of factors that
412 operate at multiple levels, and it is unlikely that any single factor can account for the array of differences
413 in human-animal relationships (Unger, 2001; Lippa, 2010).

414

415 There is scientific evidence that the age has a significant effect on opinions about animal welfare issues
416 (Miranda-de la Lama et al., 2013). In general, older people believe that animals are well treated, while the
417 younger population has more negative perception (Gamborg and Jensen, 2017). In a survey published by
418 Gallup in 2008, the differences between age classes are significant, with persons over 55 years more
419 interested in BF (44%), especially among those over 65 (in which case the ratio is 51%). Those results
420 generally coincide with those in our study. There is also evidence that younger citizens are more

421 concerned about health and welfare standards, which may be considered as an indicator of concern about
422 animal suffering (Verbeke and Viaene, 2000; María, 2006). This number will probably increase since
423 many young people seem to appreciate the efforts from NGOs (Braunsberger and Buckler, 2011).

424

425 *Clusters*

426 In general, we distinguish between anti-bullfight people (ABF) and pro-bullfight people (PBF). The ABF,
427 who score higher in the animal welfare section and lower in the other sections, generally argue that the
428 practice of BF is barbaric and that the animal suffers. They also differentiate between killing for meat,
429 considered to be a necessity, and killing for fun. The PBF (scoring higher in the first four sections and
430 lower in the animal welfare section) point out that the bull is eaten afterwards, so the animal's death is not
431 in vain. They also believe that the bull does not suffer during BF because a good bullfighter will kill the
432 animal skillfully. This argument is questionable; while the final kill is quick, the suffering of the bull
433 during the fight is prolonged (15 minutes excluding transport and lairage in the ring area). Novelty is a
434 strong stressor when an animal is suddenly confronted with it and it triggers intense fear (Grandin, 1997;
435 Gregory, 2004). Bull still perceives contact with humans as an alarming predatory encounter and sudden
436 changes in their physical and social environment as a frightening experience (Waiblinger et al., 2006;
437 Zulkifli, 2013). All behavioral evidence shows that bulls suffer during BF and even in those that do not
438 end with their deaths (i.e. *rejoneo* or when the bull is pardoned for his outstanding performance). All
439 aspects of any BF, from transport to death, are in themselves causes of fear and suffering (Casamitjana,
440 2015).

441

442 The composition of the ABF is biased by gender (more women) and age (more young). The bias is also
443 clear among urban people with higher levels of education. The PBF is composed mainly of men of
444 medium-old age. This figure is interesting for the future with young and women leading the change. We
445 think that such evolution is natural and related to other aspects of the relationship between humans and
446 animals. Bullfighting is already banned in some Spanish regions such as the Canary Islands. The EU
447 shows no sign of banning BF, and it will be critical to predict the future evolution of this controversy, and
448 the trend of the third group of indifferent or undecided regarding BF (NBF). In the coming years, it is
449 possible that the so-called "*brexiteers*" make the EU more cautious about taking measures to regulate matters
450 that may affect deep-rooted traditions of member countries (i.e. BF).

451

452 In general, the answer obtained in this study indicates that people in Spain do not fully agree with a EU-
453 imposed prohibition, even though most seem concerned about matters relating to animal welfare during
454 the fight. We perceive that people are of the opinion that BF will disappear gradually on account of the
455 natural evolution in social attitudes. This fact is confirmed by the positive attitude towards animal welfare
456 among young people and, in particular, women, which was also observed in many other aspects of animal
457 welfare issues. There are also other arguments against prohibition based on the view that this would harm
458 people financially (loss jobs). In the line of all animal welfare studies, education would be the best way to
459 achieve agreement on the prevention of animal suffering (Broom, 2001). Improving education programs
460 to include animal welfare and animal-human relationship will take time, probably generations (Mazas, et

461 al., 2013). There is already evidence to demonstrate that agreement is possible, as in the case of religious
462 slaughter (Grandin and Regenstein, 1994).

463

464 **Conclusions**

465 The results obtained in this study showed that the attitudes to BF differ with respect to the sex, age,
466 profession, origin and nationality of the respondents. Any kind of action to be taken should consider this
467 fact. The population of respondents presented three main clusters. Two extreme clusters were described.
468 One represents the favorable attitude towards BF, and the other represents the persons who are against
469 BF. The proportion of indifferent persons was important and should be monitored in the future. In
470 general, women and young people showed a more favorable attitude towards animal welfare issues
471 associated with these events, demonstrating more concern for all aspects of animal suffering. Rural
472 people were more accepting of BF than urban people. This aspect was also evident when Spaniards were
473 compared with foreigners. Students were more anti-BF than those in other occupations. Additionally,
474 technical economic factors made people favor more BF, and this is probably linked to the economic
475 crisis. The target person with anti-BF attitude should be a young, female student of urban origin. In
476 comparison, the target person with pro-BF attitude should be an older Spanish man, retired, of rural
477 origin. The growth of claim against bullfights establishes an element of a far more multifaceted
478 phenomenon that animal cruelty *per se* and support of a new paradigm called social change in countries
479 as Spain. The limited number of published studies in the field of animal welfare reflects the lack of
480 knowledge about attitudes and opinions of citizens towards bullfighting and other festivity or ritual events
481 with animals. It is also necessary examined farming politics and practices, the existing tradition of animal
482 protection and attempts to rethink the nature of animal suffering in countries with taurine tradition.
483 Multidisciplinary and inter-sectorial works that include the animal welfare are crucial for the prevention
484 and reduction of violence in society.

485

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Table 1. Mean differences between the different population groups (according to their profession or occupation) of the overall sample ^a.

	Blocks in the questionnaire				
	Liking (<i>Afición</i>)	Culture, Art and Identity	Technical Economic	Emotional Perception	Animal Welfare
Chi-square(χ^2)	145.91	127.40	140.92	189.40	68.59
DF	4	4	4	4	4
Asymptotic significance	0.000	0.000	0.000	0.000	0.000

^a (Kruskal–Wallis test; DF: degree of freedom)

Table 2. Correlation matrix (Spearman's rho, ρ 0.001) between categories of questions.

	Liking (Afición)	Art/ Identity	Technical Economic	Emotional Perception	Animal Welfare
Liking (Afición)	1	0.763	0.659	0.706	-0.665
Art and Identity		1	0.737	0.714	-0.668
Technical-Economic			1	0.811	-0.584
Emotional Perception				1	-0.605
Animal Welfare					1

Fig. 1. Pair test results by grouping variables as gender (A), origin (B) and nationality (C).

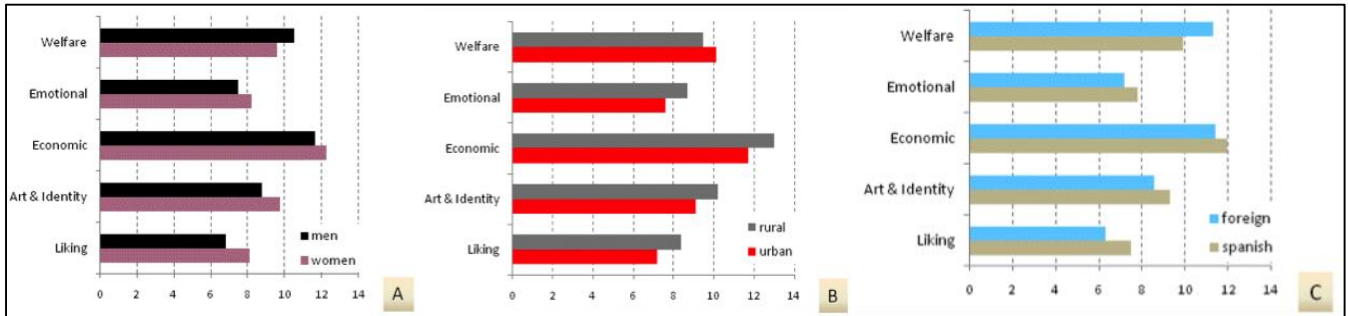


Fig. 2. Pair test results by grouping variables age class (A) and occupation (B).

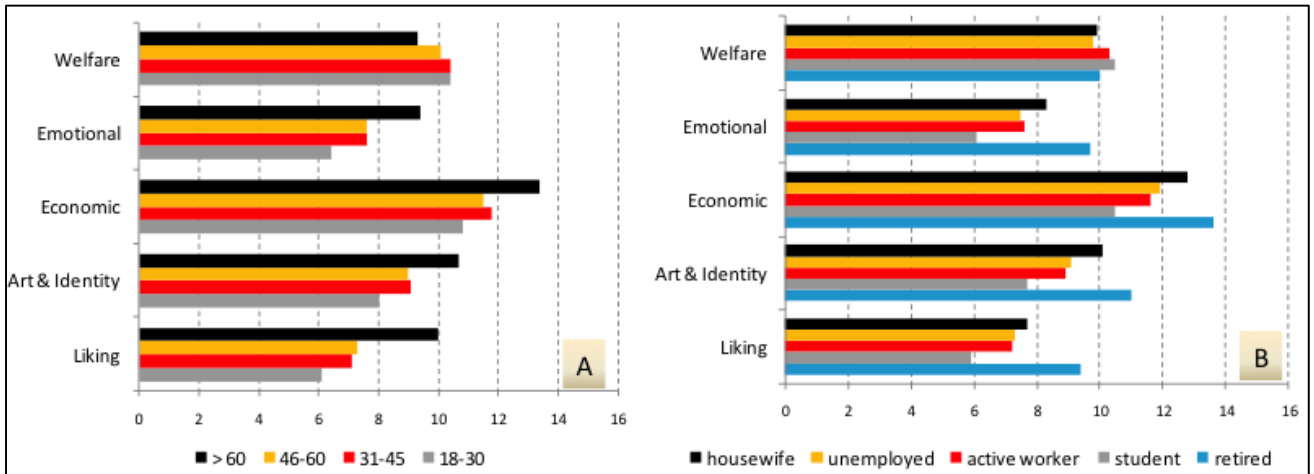


Fig. 3. Spatial representation of the clusters according to the five items (max score 100%). Pro-BF group score higher in items 1 to 4 and low in item 5. Anti-BF group score higher in item 5 and lower in the others (BF=bullfight and related events).

