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1 Qualitative assessment of value in Australian pork across cultures

2
3 *E.P. Bittner^{AG}, H. Ashman^A, R.J. van Barneveld^B, A. McNamara^C, N. Thomson^D, A.H. Hearn^E and*
4 *F.R. Dunshea^{AF}*

5 ^A Faculty of Veterinary and Agricultural Sciences, University of Melbourne, Parkville, Vic 3010,
6 Australia.

7 ^B The SunPork Group, Murarrie, Qld 4172, Australia.

8 ^C The Department of Health and Human Services, Melbourne, Vic 3000, Australia

9 ^D School of Population and Global Health, University of Melbourne, Parkville, Vic 3010,
10 Australia

11 ^E School of Languages and Linguistics, University of Melbourne, Parkville, Vic 3010, Australia.

12 ^F Faculty of Biological Sciences, The University of Leeds, Leeds LS2 9JT, United Kingdom

13 ^G Corresponding author

14 15 Abstract

16 **Context.** The Australian pork industry would benefit greatly from further development of
17 export markets across Asia, but due to the small size of the Australian industry and cultural
18 differences between Asia and the West, further insight research is required for premium
19 product development.

20 **Aims.** Qualitatively assess value in Australian pork across Australian and Chinese consumer
21 groups to investigate perceived differences in cultural attitudes to pork.

22 **Methods.** Qualitative multivariate analysis (QMA).

23 **Key results.** Australian and Chinese opinions of Australian pork products, meat and offal, and
24 farming systems differed significantly. Australian consumers desired expert opinion,
25 traditional meat cuts with minimal packaging, and small-scale production with superior
26 animal welfare. Chinese consumers wanted clean, healthy and versatile products, with
27 consistent quality, without concerns around animal welfare.

28 **Conclusions.** The compatibility of the markets and consumer preferences show great promise
29 for Australian pork holding value in the eyes of Chinese consumers,

30 **Implications.** Results offer insight for future product development for export and targeted
31 domestic markets. Findings will also enable future quantitative research efforts to be more
32 targeted and specific.

33 34 Introduction

35 The Australian agricultural sector has been experiencing a price boom over the last several
36 years due to the development of its market access and increasing demand for high value
37 foods across Asia (Bittner *et al.* 2017). However, this impact has not been felt equally across
38 all industries within the sector. While Australian pork was initially expecting to see growth
39 related to these trends, three buoyant years ended with an unexpected market crash in 2018,
40 with low domestic prices and exorbitant production costs sending the industry into crisis (Lee
41 2018). Currently, with African Swine Fever (ASF) ravaging the Asian continent and decimating
42 pig populations all over the Pacific (MLA, 2019), pork prices in Australia have increased while
43 the continent remains ASF free. This market stabilization due to ASF should not be seen as a
44 sustainable avenue for the growth of Australian pork, and the industry must use this time to
45 invest in more stable, long-term avenues for its future. COVID-19 has also had an impact on
46 the Australian pork market with meat being an item that was stockpiled during lockdown
47 stages (D'Souza and Dunshea 2021). The global pandemic and lockdowns initially caused a

48 surplus of pork due to interruption and closure of restaurants and food service, particularly
49 in premium cuts, although this was buffered by the increased household demand, and has
50 since rebounded since most Australian lockdowns have been removed (D'Souza and Dunshea
51 2021).

52

53 Unlike Asia, where the entire carcass is consumed and sold with high margins, with offal and
54 ribs narrowly representing the largest consumption as part of a very even distribution (Oh
55 and See 2012), Australian consumers are far more selective in the cuts they desire. Large
56 proportions of the pig carcass are sold at a low cost or even a loss due to them having little to
57 no value in the domestic market. Add to this that currently Australian pork imports far exceed
58 exports (APL 2017), and you have an incredibly vulnerable market to even small price
59 fluctuations. The COVID-19 pandemic has had an even greater impact on Australian trade of
60 pork with decline in air travel and increased freight costs reducing both the imports and
61 exports (D'Souza and Dunshea 2021). Prior to these issues, producers felt that the global trade
62 environment has shifted away from expectations since the government last addressed foreign
63 policy, domestically operating as a free market with little to no tariffs on imports, while not
64 seeing the benefits from its trade partners on exports (APL 2017). Innovation and expansion
65 into export markets is required for the Australian pork industry to properly address these
66 issues as the world begins to return to normal post COVID-19.

67

68 Discovering compatible international markets obviously makes economic sense for the
69 Australian pork industry, but making better and more complete use of the entire carcass also
70 has incredible environmental and social sustainability impacts at the same time. Chinese and
71 Western pork preferences are extremely complimentary, with Western consumers preferring
72 lean meat cuts, and Chinese consumers leaning toward fat cuts and pork offal (Wang *et al.*
73 1998). The comparative size of the Asian market makes it an obvious target for Australia with
74 an ever-growing middle class and more affluent consumers than Australia's entire population
75 (Euromonitor 2011). China, Japan, Korea, along with several niche markets in Hong Kong and
76 countries within the ASEAN region are increasingly high value export market possibilities for
77 Australian pork (APL 2010). The value of these Asian markets is also likely to be stable heading
78 into the future with Asia set to become the backbone of global consumer markets, predicted
79 to account for 50% of all global consumer expenditure by 2050, with strong growth in luxury
80 goods and a rising trend of premiumisation (Euromonitor 2017).

81

82 The mere fact that the carcass disposal is compatible between Australia and these Asian
83 nations does not mean it is simple to develop these markets as viable export options.
84 Consumer, market and sensory research will be required to fully appreciate how Australian
85 pork can be competitive in Asia (Bittner *et al.* 2017). Understanding the impact of cultural
86 differences and their impact value is key to development of these export opportunities, as
87 currently Australian pork is not highly valued in these markets. Due to this current lack of
88 value, and the relatively small size of Australia's pork industry, it is important that Australia
89 look to export quality over quantity (Bittner *et al.* 2017). While significant market opportunity
90 does exist for exporting premium food products to Asia, internationally Australia are deemed
91 as good sellers of food, but not good promoters on their exports, relying on their reputation
92 as a 'clean and green' nation (Bittner *et al.* 2017). However, Australia is not the only country
93 to hold this reputation, and more effort is needed to stand out in an ever-increasing
94 marketplace. To gain proper market access in Asia, and China specifically, Australia must do

95 so in specific premium products catered to the luxury goods market. With Asia possessing
96 over 2600 unique cultural consumer segments, and China alone being more culturally,
97 linguistically, religiously and genetically diverse than the entire European Union (Euromonitor
98 2011), insight is required to capitalise on these opportunities. This is particularly true for
99 Western nations where food eating habits, ingredients, preparation, and packaging are all
100 vastly different.

101
102 While quantitative studies will be necessary to complete the full analysis, qualitative
103 methodology is a key first step into asking the right questions to properly address what to
104 test quantitatively, through methods such as conjoint analysis. Qualitative research is a quick,
105 inexpensive way to probe consumer demands in a natural and comfortable setting allowing
106 to properly develop and refine hypotheses in product development, leading to a better
107 understanding of consumer behaviour and motivation (Jervis and Drake 2014; Hastie *et al.*
108 2020; Mena *et al.* 2020). This research will assess value in Australian pork across both
109 domestic (Australia) and Asian (China) markets using qualitative methods. This project aims
110 to investigate perceived differences in cultural attitudes to pork, through the use of
111 Qualitative multivariate analysis (QMA). The study will explore how these cultural differences
112 impact value and premiumness, and define the attitudes and opinions that drive value
113 perception in both Australian and Chinese consumers.

114 115 **Materials and Methods**

116 Also known as napping, QMA is a method for sorting groups of things (e.g. products or
117 packages) with reference to each other (e.g. similarities and differences) based on their
118 qualities (Lopetcharat and Beckley 2012). It is a modern and reliable technique to perform
119 research exploration that has historically found results with small sample size ($n=12$) similar
120 to those obtained in larger quantitative studies ($n=110$) (Drake *et al.* 2009).

121
122 A QMA deals with two variables, in this case, set by the researcher, both on a continuous scale
123 with the extremes of each other in order to stretch the available space for mapping as far as
124 possible. While more classic or conventional consumer and marketing research processes can
125 be quite robust, they are lacking in some core implementation areas such as the ability to
126 reflect empathy, appropriately unlocking consumer's behaviour and needs, and asking
127 relevant questions to completely capture the consumers views and beliefs on a product
128 (Lopetcharat and Beckley 2012). QMA provides a single consumer voice, the group working
129 together to find a unified answer, allowing different demographic groups (i.e. Australian and
130 Chinese) to be easily compared. Replicates of this single group voice can (and should) be
131 obtained to validate results.

132
133 For this study, QMA sessions were conducted in the sensory science facility within the Faculty
134 of Veterinary and Agricultural Sciences, at the University of Melbourne Parkville campus,
135 Victoria, Australia. Both QMA and focus group methodologies were used under the University
136 of Melbourne human ethics protocol 1646413.

137 138 *Participants*

139 24 Australian pork consumers ($n=17$ females, 7 males ages 19-68) and 18 Chinese (people of
140 Chinese decent, newly arriving to Australia < 1 year prior to the study) pork consumers ($n=11$
141 females, 7 males ages 23-28) were recruited via online advertising and email lists for sensory

142 participants for several small panels consisting of 4-8 people per session. Due to the limited
143 number of participants and stringent acceptance criteria, it was difficult to conduct this trial
144 with a balance of genders and age. All participants declared that they were meat and more
145 specifically pork consumers and conducted at minimum 50% of their household shopping,
146 identifying them as the main shopper in the household. A plain language statement was
147 provided with detailed information of the study.

148 149 *Procedure*

150 Data was collected for all demographic groups following the below procedure, with each
151 focus group proceeding through the initial discussion and three mapping exercises
152 sequentially. Sessions for each demographic happened on separate dates. For Chinese focus
153 groups, a translator facilitated the discussion and mapping exercise along with a trained
154 mediator, experienced in QMA and focus group methodology. All discussions were also
155 recorded in English by two separate researchers present in the room and lasted
156 approximately 1.5 hours. A discussion guide was utilized to facilitate the conversation and
157 reach the learning objectives.

158
159 Step 1: A group discussion was held, and recordings were made of the participants habits and
160 behaviour for the purchase and consumption of pork in Australia. For Chinese groups,
161 comparison was made to their habits and behaviour within their native country, and all major
162 differences were noted. Participants were asked to describe why they held certain purchasing
163 habits, and what drove their preferences for the purchase of meat. Mood boards specific to
164 each demographic were used also, and in combination with eating and buying behaviour
165 discussion helped frame the conversations to come during the mapping exercises.

166
167 Step 2: Perceptual mapping of on-shelf Australian and Chinese pork products was conducted,
168 where provided samples were placed on a two-dimensional map with the X-axis being:
169 'Everyday' to 'Premium' and the Y-axis 'Familiar' to 'Unfamiliar'. Both axis were non-
170 numerical and continuous. The definition of 'Everyday' and 'Premium' was discussed at length
171 with participants, as it was more than just a measure of quality. An everyday item may still
172 be considered 'good quality' but lacks certain properties that make it more 'special' than most
173 items found on a supermarket shelf. Premium products likewise are more than just quality,
174 they possess 'delighter' attributes as described by the Kano method (Kano *et al.* 1984). The
175 map was produced on the tabletop which participants sat around and recorded using the
176 Mural.ly app and photographs. Products were selected to be of a wide range encompassing
177 the most popular pork items on Australian and Chinese supermarket shelves. In this first
178 exercise, the actual products were available for participants to inspect and map onto the
179 table, although no tastings took place. For each product, participants were questioned on
180 their familiarity, purchase intent and consumption intent. To begin each session, the
181 moderator placed a single pork loin chop in the centre of the map as a reference point, with
182 all further placements of products made relative to it. This was chosen as it is known to be
183 familiar to both groups and generic, helping to set an anchor point. The analysis focused on
184 the groupings and clusters formed by the participants on the map, and what drove value in
185 their eyes. All conversations were transcribed to capture opinion.

186
187 Step 3: Perceptual mapping of Australian pork primal cuts and offal was then conducted for
188 both demographic groups as above, with the same axis. It was stressed to participants from

189 both demographic groups to assume all products were Australian pork. The anchor point for
190 this exercise was a photograph of a single pork loin chop, with everything else mapped in
191 reference to this. For this mapping exercise photographs were used rather than real products.
192 The map was produced on the tabletop which participants sat around and recorded using the
193 Mural.ly app and photographs. The analysis focused on the groupings and clusters formed by
194 the participants on the map, and what drove value in their eyes. All conversations were
195 transcribed to capture opinion.

196
197 Step 4: Perceptual mapping of pork farming practices was conducted for all demographic
198 groups. A range of photographs depicting the main types of farming practices (indoor, barn-
199 raised/eco-shed and free range), under different conditions (high/low stocking density,
200 clean/dirty, etc.) to gain insight into how farming conditions drove perception of value.
201 Samples were again placed on a two-dimensional map with the X-axis being: 'Everyday' to
202 'Premium' and the Y-axis 'Modern' to 'Traditional'. Both axis were non-numerical and
203 continuous. The first photo shown and used as the anchor point was of a single pig in grass
204 with no obvious farming system, and all following photos mapped in reference to that. The
205 map was produced on the tabletop which participants sat around and recorded using the
206 Mural.ly app and photographs. As participants ranked and mapped each system, they were
207 questioned on their familiarity, opinions and beliefs about each system and condition, and
208 how that was impacting the value they saw in products that were produced this way. All
209 conversations were transcribed to capture opinion.

210
211 Step 5: Once all groups and demographics had completed all exercises, the data from each
212 map was collated into a single map for all agreed upon placements of products, which appear
213 in the following results section. Where agreement was not made across groups as to an
214 individual placement, it was not included in the overall results. Detailed notes were taken in
215 the discussion section of the QMA to identify why placements were different across groups.

216 217 *Data Collection and Analysis*

218 For the QMA studies, discussions were highly consistent within focus groups, with no new
219 topics emerging during the repeat sessions, indicating that thematic saturation was reached
220 in the early, with a high consistency within the focus groups. After the mapping exercise,
221 participants generated thematic groupings for meat cuts and farming practices allowing for
222 identification of value attributes, linkages between groupings, and potential opportunity
223 spaces. The focus groups then further discussed how each grouping was valued and why,
224 describing the groupings common attributes and benefits or shortcomings. Data was
225 transcribed and important information that was provided with consistency across focus
226 groups was annotated and used to identify important recurring themes between groups.

227 228 **Results**

229 *On-Shelf Pork Product Discussion and Perceptual Mapping by Australian and Chinese* 230 *consumer groups*

231 Insights into on-shelf pork products for Australian consumers are given in Figure 1. All
232 products displayed in this figure were agreed upon between and across all groups.
233 Interestingly, the most familiar and often used items; loin chops (A), mince (B) and schnitzels
234 (C), did not rate as premium even though they were considered to be of good quality. To enter
235 the premium space for Australian consumers, some form of value-add was required, as can

236 be seen with the glazed ribs (E) and belly rashers (F), and the scotch fillet with herb butter
237 (D). Any foreign labelling immediately reduced the quality of a product, and eating experience
238 was key to drive both good and premium quality measures.

239

240 At this stage participants were encouraged to elaborate on what it was about the premium
241 grouping that separated them from the more standard on-shelf products. All consumers
242 agreed that no truly 'Premium' products were presented to them, they had to come from a
243 butcher or market, not the supermarket. Then the first and most commonly agreed upon
244 characteristic was that for a supermarket product to approach premium, it must have value-
245 add properties, but still "look like pork". Instructions on how to cook the product as part of
246 the packaging was also an addition to the products value, as consumers had a general belief
247 that pork was not simple to cook. It was clear that what a consumer considered as premium
248 was very different between a supermarket shelf versus at a butcher or restaurant, where
249 Australian consumers placed immense trust in the expert opinion of those suppliers. While
250 pork products with minimal or no packaging, and without value-add could be good quality,
251 they could not be premium on a supermarket shelf, that could only come with expert opinion,
252 via a butcher or chef. When asked to consider if and how packaging might be able to reflect
253 the quality of a butcher/restaurant, consumers conveyed that the meat be presented as it is
254 in a butcher or restaurant window, placed on dark trays or wooden boards, with less
255 packaging. The final note worth mentioning was that the more green that was presented as
256 part of the packaging, brought consumers towards organic and healthy foods, which did help
257 shift foods into the premium space, but this was less clear cut for meat than other foods.

258

259 **Figure 1.**

260

261 The contrasting opinions of Chinese consumers can be seen in Figure 2. Pork schnitzels are
262 missing from this map as they were highly unfamiliar to the Chinese consumers and there was
263 huge variation of where they were mapped between groups. The first noteworthy finding
264 from the Chinese participants was that they mainly sourced their pork from supermarket
265 chains, not from markets or butchers (which was unexpected and did not reflect the buying
266 behaviour in their home country), with their choice of cut dependent heavily on the meal they
267 intended to cook. They expressed that the pork options available to them on Australian
268 supermarket shelves were of decent quality but lacking in choice. Initial expectations for high
269 familiarity among all Chinese products was not seen in the results, due to diet and available
270 products being highly correlated to different regions of China, hence few Chinese products
271 that were part of the exercise made it to the final results.

272

273 Overall, the mapping process with the Chinese participants was a much more logical exercise,
274 forming a very linear map. While the highly familiar Chinese snack products were rated as
275 everyday rather than premium, this did not reflect any issues with quality and all participants
276 expressed a large appetite for all products grouped here. Not only did participants express a
277 visceral desire for these snacking products, they lamented that they were not readily available
278 on Australian shelves and were without comparable Australian products. This gap for a pork
279 snacking product seen in both the Australian and Chinese demographic groups suggests a
280 potential area of growth for the Australian pork industry. The most commonly consumed
281 products (highlighted in green) were considered to be of decent quality but not in any way
282 designed for Chinese consumers. A significant amount of further preparation was required

283 for any product purchased, as the cuts were wrong for what Chinese consumers desire in their
284 cooking. The most common issue raised was that the steak cuts of fresh pork products offered
285 on Australian shelves were too large and cut too thickly. Unfamiliar products were considered
286 to be premium mainly due to packaging. On further questioning and discussion, the majority
287 of Chinese participants admitted they would be far more likely to try these products if cooked
288 by an Australian friend, and were unlikely to purchase or cook these products personally.
289 Value-add products with marinade were considered for the most part undesirable as they
290 would rather make more traditional marinades themselves, which was paradoxical to them
291 being mapped as premium. The highest indicator of a premium on shelf product for these
292 consumers was vacuum packaging, which gave a clear impression of freshness, allowed the
293 consumers to touch the meat and inspect its tenderness, and reduced the appearance of drip
294 loss in the meat which was highly negative for Chinese consumers. Green packaging elements
295 reflected organic, in a similar way to Australian consumers, although Chinese consumers
296 mentioned that several other colour elements to be positive, with few negative remarks made
297 towards the colour scheme of the packaging in products used.

298
299 **Figure 2.**

300
301 *Pork Primal Cuts and Offal Product Discussion and Perceptual Mapping by Australian and*
302 *Chinese consumer groups*

303 Results from the pork primal cuts and offal products for Australian consumers can be seen in
304 Figure 3. All opinions offered by consumers were clearly married to past eating experiences.
305 The cuts identified as 'top of the line' were well known to the participants, and highly
306 purchased products. Lesser known cuts that were often met with confusion as to what they
307 were (i.e. a tenderloin was regarded as a beef product), and without a memorable eating
308 experience or name recognition the value was unable to be agreed upon within and between
309 groups. Larger cuts of meat were less premium as they required more preparation for
310 cooking, i.e. a chop was more premium than a full tenderloin. Thicker cuts, with more lean
311 tissue and less fat were seen as better value for money, but at the same time, fat was a key
312 part of a premium product. The importance of fat was dependent on the cut or product, being
313 a premium marker for a steak but not for mince. Marbling was a term often discussed in
314 groups but not reflected in participants overall mapping of the cuts. In rating these products,
315 professional and trusted expertise was key for premiumness, with butchers and restaurants
316 key figures for identification of premium meat cuts, and artisanal preparation a bonus for any
317 premium product.

318
319 Several terms such as free range, dry aged, and grass fed were discussed commonly in all
320 groups around premium meat products, but what exactly linked those terms to pork
321 specifically was not something any group was able to answer. All groups showed intrigue at
322 the group outlined in yellow, seeing them as specialty products although they had little to no
323 eating experience with products grouped here. All offal was placed together (highlighted in
324 purple) with groups consistently stating they would not eat these products. The only
325 exceptions to this were hocks and marrow bones, which were not placed with the other offal
326 due to their potential for soup stock and some more European eating experiences. There was
327 not, however, agreement otherwise on where they should be placed between all groups and
328 so are not displayed on the map in Figure 3.

329
330 **Figure 3**

331

332 Results for the Chinese demographic group can be seen in Figure 4. Meat selection and
333 mapping was a far simpler exercise for Chinese participants, resulting in a highly linear map
334 with no obvious groupings. During the mapping exercise participants expressed that there
335 was little differentiation between meat products, feeling that they were being presented the
336 same product repeatedly. Due to this they mapped on familiarity more so than preference,
337 with no particular muscle or cut type standing out as more desirable. Participants explained
338 that meat selection was done looking at colour, with pink an identifier of freshness and
339 quality. Fat, skin and bone are considerations only dependent on the meal being prepared,
340 with their absence or presence in no other way impacting quality or premiumness. Size was
341 also described as highly important echoing the previous mapping exercise (Figure 2), as they
342 felt everything presented was too large.

343

344 Unlike Australian consumers who considered all offal as unfamiliar and inedible (Figure 3),
345 offal products were highly differentiated for Chinese participants. They were grouped closely
346 as all were highly familiar, but each had a large degree of tradition, culture and eating
347 experience and specific preparation. All offal products shown to the participants were highly
348 liked and desirable. It was noted that offerings of these products within Australia were
349 cheaper than when purchased in their home country, but also of far lower quality, not
350 prepared right, and in some cases even described as being 'dirty'. Participants also expressed
351 that most offal products would be purchased if available on supermarket shelves, with the
352 only barrier being the complex cooking method of some offal products (i.e. stomach, intestine
353 and ears).

354

355 **Figure 4.**

356

357 *Farming Practices Discussion and Perceptual Mapping by Australian and Chinese consumer*
358 *groups*

359 The Australian results for the farming practices discussion and QMA can be seen in Figure 5.
360 The mapping exercise initially unfolded as expected with a linear progression from everyday
361 to premium from indoor farms with high stocking densities to free range farms with lower
362 stocking density. Axis names were changed for the perceptual mapping of farm systems as
363 this terminology was more applicable but still in line with familiarity. What was interesting
364 was the clear correlation between modern farms being considered everyday quality and
365 traditional farms being premium. During discussion on farming practices, participants strongly
366 expressed a strong mistrust of industry. All photos displaying positive images of farming
367 presented to them were believed to be misleading, with even the barn/eco-shed systems
368 shown often described as 'factory' farms. Anytime fencing, walls or enclosures of any type
369 were present in a farm setting it was met with a rapid drop in opinion, even in an outdoor
370 system. Consumers felt that any such inclusion was unnatural and would impact on the
371 'happiness' and comfort of the animals. When prompted to expand on their thoughts around
372 a particular system the groups and individuals had a strong attitude towards, more in-depth
373 discussion very quickly led to confusion within the group, exhibiting a genuine lack of
374 knowledge of all farming systems leading to an inconsistent and distorted view of how meat
375 was produced among all groups.

376

377 What was emphatically clear was that the biggest factor in Australian opinion of best farming
378 practices was scale, not the system itself. A small scale linked to traditional methods led to
379 trust in the participants. The belief was consistently presented within and between groups
380 that animal welfare, and ethical food production was only possible on a small scale, as the
381 size of the farming operation increased so did the negative connotations associated with
382 farming. It became clear after completion of this exercise with all Australian groups, that
383 thinking of farming in terms of scale rather than free-range or indoor, lead the participants
384 away from welfare concerns and towards eating experience and taste. The linearity of the
385 map show that these two factors are closely linked for Australian consumers. A better axis for
386 future research will be 'farm size'.

387
388 **Figure 5.**
389

390 Chinese opinion of Australian pork farming practices can be seen in Figure 6. Attitudes
391 towards farming systems were almost entirely positive, in stark opposition to Australian
392 participants, with a majority of discussion based around the benefits of each system as
393 differentiators, not the issues that Australian participants were quick to discuss. The Chinese
394 demographic showed no strong preference for any system, with no clear groupings able to
395 be made, with mapping placement being dependent on the look of each system not a
396 preference for one over another. They clearly and openly differentiated that these were their
397 opinions of Australian farms only, and that their opinions of similar systems in China would
398 be significantly different. This was particularly true for the free-range systems, which they
399 were unfavourable towards within Chinese production but satisfactory in Australia due to
400 their perception of Australia as clean and free from pollutants. In stark contrast to Australian
401 results, animal welfare was not discussed in any Chinese group. Chinese consumers were not
402 interested in animal welfare, even when directly challenged by the mediator. Differentiations
403 between systems were made on access to cover, cleanliness, and perceived comfort of the
404 animal within that system due to a range of factors such as temperature exposure and
405 stocking density. Chinese consumers in all groups believed Australian farming practices were
406 of a high standard, emphasising the clean air and land, and lack of pollutants in our systems.

407
408 **Figure 6.**
409

410 **Discussion**

411 This research is a significant step towards bridging the gap in understanding of cultural
412 differences and influences that determine buying behaviour of pork. The qualitative data
413 presented shows a clear divide in opinion towards Australian pork for both Australian and
414 Chinese consumers, and in their perception of premium when it comes to purchasing pork.
415 Australian consumers desired expert opinion, traditional meat cuts well known to them
416 through prior eating experience with minimal packaging, and small-scale production
417 reflecting a perception of better animal welfare. Further information on production methods
418 was not desired. Chinese consumers wanted clean, healthy and versatile products, with
419 consistent quality. They expressed that currently there are not any products on Australian
420 supermarket shelves made for them, and that there is a lack of pork snacks and offal products
421 available. The further understanding we develop around these benefits, irritations, and even
422 confusions of products is highly valuable throughout the supply chain. Research has shown
423 consistently that brand value and loyalties are becoming an endangered species in food, and
424 practical implications suggest that you must define the features of a product in terms of

425 perceived functionality, as seen in the eyes of their consumers across various segments
426 (Upshaw 1995; Rust *et al.* 2004; Gabay *et al.* 2009). While quantitative studies are a key next
427 step, qualitative research such as this is key to identifying these product features and their
428 perceived functionality within target consumer segments.

429

430 There were several key outcomes and insights for the Australian participants. Firstly, the
431 negativity and mistrust expressed toward meat production was evident in almost all
432 discussions held, particularly with older participants (age >35) within the groups. There was a
433 belief that the photos of farming systems presented to them were misleading, and any
434 scientific opinions or facts raised by other participants were attempts at deception from large
435 meat production bodies, although few specifics were ever available for identification on who
436 that could be. Although the mapping of farm systems saw free-range farms identified as 'best-
437 practice' (Figure 5) due to perceived welfare benefits, these farms were still not seen as high
438 welfare environments and were still seen as a negative. Herein lies the major benefit of the
439 QMA method, with the discussion informing the mapping exercise and capturing the specific
440 opinions of consumers driving the placement of stimuli on the map. Using traditional survey
441 or ranking methods, it would appear that there was a great improvement in overall opinion
442 towards free-range farming over other farming practices. The results of this study suggest
443 that although free-range pig farming is indeed seen as the best current method of production
444 in the eyes of the consumer, all systems are seen as a negative, signifying that any promotion
445 of farming methods as a driver for premium may not be ideal for Australian consumers.

446

447 While welfare was clearly and consistently the most discussed topic within all Australian
448 groups, how it was discussed was not consistent nor were the beliefs held and facts presented
449 by different individuals within and between groups. Recent studies have shown that while
450 consumers will generally rank welfare as important, they also rank it low relative to other
451 societal problems (Thorslund *et al.* 2017). It is therefore likely that the discussion of welfare
452 in relation to meat production and its impact on pork value, was the result of participants
453 talking as citizens and not consumers, expressing their personal values about ideal society
454 rather than their consumer preferences while making a purchasing decision. Further to this
455 point, while consumers have wide ranging concerns with pig welfare their main focus is on
456 naturalness, believing that the more natural environment that is presented the better it must
457 be for the animal, and the importance of 'happy pigs' having a 'happy life' (Harper and
458 Makatouni 2002; Lassen *et al.* 2006; Thorslund *et al.* 2017). This is particularly true for
459 Australian consumers due to their urbanisation and the populations lack of knowledge on
460 how food is produced. This perception of happier animals is likely achievable through
461 marketing efforts, and the desire for naturalness was clearly reflected in the results of this
462 study. It is also suggested in the literature, that welfare is highly associated with eating quality
463 (Thorslund *et al.* 2017), so there are many further avenues to cue high welfare standards
464 other than the promotion of free-range, due to these results showing that all farming
465 practices are held in a negative opinion, with no current system linking to cues for naturalness
466 or happier animals. The Australian mapping of farm systems (Figure 5) was highly reflective
467 of past research where welfare is based on idyllic images of farming practices and animal
468 production in the countryside (Bracke *et al.* 2005).

469

470 Another key outcome from Australian consumers was their inconsistency in knowledge
471 around pork products and meat cuts. Australian consumers did not trust their knowledge on

472 cuts and product type, quality assessment, preparation or cooking. Currently, this lack of
473 familiarity and recognition is a barrier stopping positive eating experiences in pork driving
474 value in specific products. Market segments are formed around the different attitudes people
475 hold toward various blends of product features such as packaging and presentation to the
476 customer, which can be a principal driver of value (Gabay *et al.* 2009). The Australian pork
477 industry has put some marketing effort into cooking time and preparation with campaigns
478 such as '6-2-2' advertising (APL, 2020), but consumers still appear confused with this issue.
479 The unfamiliarity of pork cuts, and how they relate to quality may be a future avenue for
480 advertising campaigns and product development. Australians who are experienced cooks are
481 comfortable purchasing premium meat from high end butchers for home preparation,
482 whereas many Asians and non-experienced Australians would prefer these premium eating
483 experiences happen within a restaurant, where professionals have the responsibility of
484 ensuring a good eating experience (Hastie *et al.* 2020). It was clear from these results that the
485 familiarity Australian consumers had with pork was low compared to other meats.
486 Additionally, any future premium product development would need to be minimalistic in its
487 packaging, and supermarkets were not the channel for these to be sold through without
488 efforts made to educate consumers on pork quality assessment and cut selection.

489
490 It was far from a revelation that Chinese consumers possessed decidedly differing opinions
491 towards pork from their Australian counterparts. How and why they held these opinions, and
492 how they differentiated that these opinions were held for Australian pork consumed in
493 Australia, and not necessarily their opinions of pork from their home country was where the
494 insights were found. There were several key findings for Chinese Participants. Firstly, they did
495 not feel that any products on the Australian shelf were designed for them, which was a belief
496 held consistently with all groups. Vacuum packaging was a must, and immediately identified
497 as a signifier of premiumness. There was also a gap in pork snacking products, and in pork
498 offal, and the offal that was available in Australia was mentioned to be poorly prepared and
499 not of high quality compared to what was available in China. Development of appropriate
500 cuts, in vacuum packaging would be a quick and easy outlet for Australian producers to
501 immediately open an avenue to a new engaged consumer base. The lack of familiarity with
502 the Chinese products shown in the first mapping exercise (Figure 2) was initially surprising,
503 yet considering the evolving geographic differences in China and the persistence of huge
504 variations in economic profiles of different cities, not to mention the geographic differences
505 in food preferences in China this should not have been a revelation (Euromonitor 2011, 2017).

506
507 The Chinese market is known to be both incredibly diverse, and evolving rapidly with a drive
508 towards urbanisation, more curious and less loyal customers, and growing discretionary
509 spending leading the rise of consumerism (Atsmon *et al.* 2012). However, the immense
510 cultural ties between pork and the Chinese people make opinions held for pork more
511 consistent. Pigs have been raised and consumed in Chinese households for centuries, the
512 huge cultural impact of pork production and consumption is even evident in their language
513 (Schneider and Sharma 2014). In Mandarin, the general word for meat (rou) refers to pork
514 and the Chinese character for home and family, 家(jia), was created some 3,500 years ago by
515 adding the roof radical to the pig radical, or more figuratively, by putting a roof over a pig's
516 head (Schneider and Sharma 2014). This cultural significance is key in any attempt to develop
517 a product for China, where meat signifies progress against a backdrop of scarcity, a progress

518 that the government is keen to count among its modern accomplishments (Schneider and
519 Sharma 2014).

520

521 While there are currently no avenues for Australian pork to be exported directly to mainland
522 China, the data collected by this project can still be incredibly beneficial. There has been
523 prolific spread of Chinese communities throughout ASEAN nations, and even within Australia.
524 This wave of Chinese migration is known as Chinese diaspora. There are approximately 46
525 million Chinese people living outside of China, Hong Kong, Taiwan and Macau, 30 million of
526 these migrants live within other ASEAN nations constituting approximately 10% of the
527 population of Southeast Asia, and close to one million within Australia (Anonymous 2014).
528 These one million pork consuming shoppers make up a significant segment of Australia's
529 market, and as shown by these results, Chinese shoppers within Australia do not feel like
530 there is a single product on a supermarket shelf designed for them. The compatible markets
531 offered by Chinese and Australian consumer preferences were again highlighted by these
532 results, with Chinese consumers being far more accepting of meat cuts and offal deemed
533 unacceptable by Australian consumers. Further to this point, the high opinion of Australian
534 farming practices, lack of perceived pollution and cleanliness of Australian pork in general
535 would likely benefit the development of offal products even more than meat.

536

537 Packaging for Chinese consumers seems viable with several colours and designs, but for a
538 product to be considered premium it must be in vacuum packaging. Tenderness is gauged by
539 pressing a finger into the cut of meat, MAP or overwrap style packaging doesn't allow for this
540 critical step and is a barrier to purchase. It must be noted that the one demographic within
541 Chinese participants that was not captured in this research was older consumers (age >35),
542 which was able to be captured within the Australian data. The authors do not believe this has
543 a large impact on the outcomes of the study, and the analysis of younger Chinese consumers
544 will make these outcomes applicable to the key future opinion leaders. This gap will also be
545 addressed in future research.

546

547 In conclusion, the research conducted, and results presented are a crucial first step into
548 proper understanding of the impact culture has on value, and the development of premium
549 products in Australian pork. The combination of compatible markets offered by Australian
550 and Chinese consumer preference shown in these results, Chinese diaspora opening up
551 domestic and international avenues for a new consumer base, and the acceptability of
552 Australian pork shown by Chinese consumers, all give great promise to Australian pork
553 producers looking for more stable and diverse avenues to sell their products. Further research
554 and development is required, and the results of this project are to be entered into a conjoint
555 analysis for quantitative testing and further insight into the power of the opinions expressed
556 in the presented research.

557

558 **Conflicts of Interest**

559 Frank Dunshea is an Associate Editor. Despite this relationship, he did not at any stage have
560 editor-level access to this manuscript while in peer review, as is the standard practice when
561 handling manuscripts submitted by an editor of this journal. The authors have no further
562 conflicts of interest to declare

563

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567

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631

632 Figure Captions

633
634 **Figure 1.** Perceptual map generated by Australian consumers in the qualitative multivariate analysis (QMA) of
635 on-shelf products for all groups. The Australian pork loin chops were the first shown, with everything else
636 mapped relative to it. (A) Australian pork loin chops; (B) Pork mince (no obvious country of origin); (C) Australian
637 pork schnitzel (SunPork brand); (D) Australian pork scotch fillet steak with herb butter (Bruemar brand); (E)
638 Australian BBQ glazed pork ribs (SunPork brand); (F) Australian seasoned pork belly rashers (SunPork brand); (G)
639 Frozen sliced pork belly (Chinese labelling); (H) Chinese honey pork jerky; (I) Chinese pork luncheon meat
640 (canned).

641
642 **Figure 2.** Perceptual map generated by Chinese consumers in the qualitative multivariate analysis (QMA) of
643 on-shelf products for all groups. The Australian pork loin chops were the first shown, with everything else mapped
644 relative to it. (A) Australian pork loin chops; (B) Pork mince (no obvious country of origin); (C*) Australian pork
645 schnitzel (SunPork brand); (D) Australian pork scotch fillet steak with herb butter (Bruemar brand); (E) Australian
646 BBQ glazed pork ribs (SunPork brand); (F) Australian seasoned pork belly rashers (SunPork brand); (G) Frozen
647 sliced pork belly (Chinese labelling); (H) Chinese honey pork jerky; (I) Chinese pork luncheon meat (canned). *C
648 not shown in figure as there was not agreement on placement across groups.

649
650 **Figure 3.** Perceptual map generated by Australian consumers in the qualitative multivariate analysis (QMA) of
651 pork primal cuts and offal for all groups. The loin chop was the first shown, with everything else mapped relative
652 to it. All products represented were assumed to be Australian pork. (A) Loin chop; (B) Belly; (C) Ribs; (D) French
653 dressed cutlets; (E) Rolled shoulder roast; (F) Mince; (G) Diced loin; (H) Full leg; (I) Jowell; (J) Half carcass; (K)
654 Suckling pig; (L) Heart; (M) Ear; (N) Tongue; (O) Intestines; (P) Trotters.

655
656 **Figure 4.** Perceptual map generated by Chinese consumers in the qualitative multivariate analysis (QMA) of pork
657 primal cuts and offal for all groups. The loin chop was the first shown, with everything else mapped relative to
658 it. All products represented were assumed to be Australian pork. (A) Loin chop; (B) Belly; (C) Ribs; (D) French

659 dressed cutlets; (E) Rolled shoulder roast; (F) Mince; (G) Diced loin; (H) Full leg; (I) Jowell; (J) Half carcass; (K)
660 Suckling pig; (L) Heart; (M) Ear; (N) Tongue; (O) Intestines; (P) Trotters.

661

662 **Figure 5.** Perceptual map generated by Australian consumers in the qualitative multivariate analysis (QMA) of
663 pork farming practices for all groups. The single pig in grass was the first shown, with everything else mapped
664 relative to it. All farms represented were assumed to be Australian. (A) Indoor, dirty with high stocking density;
665 (B) Indoor, dirty with cages visible; (C) Indoor, clean with high stocking density; (D) Indoor, clean deep litter, low
666 stocking density; (E) Eco-shed (outdoor barn), deep litter; (F) Free range, dirty with grass; (G) Free range, dirty
667 no grass; (H) Free range, sunshine with grass; (I) Free range, backyard farm.

668

669 **Figure 6.** Perceptual map generated by Chinese consumers in the qualitative multivariate analysis (QMA) of pork
670 farming practices for all groups. The single pig in grass was the first shown, with everything else mapped relative
671 to it. All farms represented were assumed to be Australian. (A) Indoor, dirty with high stocking density; (B)
672 Indoor, dirty with cages visible; (C) Indoor, clean with high stocking density; (D) Indoor, clean deep litter, low
673 stocking density; (E) Eco-shed (outdoor barn), deep litter; (F) Free range, dirty with grass; (G) Free range, dirty
674 no grass; (H) Free range, sunshine with grass; (I) Free range, backyard farm.

675