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## American, Chinese And Australian Consumer Meat Preferences Have Minimal Impact On Sheepmeat Eating Quality Scores

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### Introduction

International consumer testing of Australian sheepmeat has been undertaken in China and the USA [1]. To accurately assess consumer perceptions of sheepmeat eating quality (EQ) it is important to understand whether demographic factors influence these consumer scores. Previous work utilising Meat Standards Australia protocols has demonstrated consumers with a greater appreciation of meat, score EQ more favourably compared to those indifferent to red meat. This was the case for both sheepmeat [2] and beef [3], although increases were small and not consistent for all countries (Australia, France, Northern Ireland, Poland). In addition, consumers who prefer a higher degree of cooking doneness tend to score EQ higher than those with a preference for medium doneness (Australia, Northern Ireland, and Ireland) [2, 3]. In contrast, Korean consumer scores were not influenced by red meat consumption preferences when rating grilled beef [4]. Given the similarities between Chinese and Korean traditional cuisines, we hypothesised that Chinese consumer eating quality scores may be less responsive to changes in meat preferences for appreciation and cooking doneness, compared to American and Australian consumers.

### Methods

Untrained consumers were recruited within Australia, China and the USA (n= 2160), and divided across 12 tasting sessions per country. Each consumer scored three grilled longissimus lumborum (loin) samples for tenderness, juiciness, liking of flavour, and overall liking on a scale of 1 to 100. Animal information has previously been described by O'Reilly et al. [5]. In addition to scoring meat samples, consumers answered a short demographics survey. Consumers were asked about lamb consumption habits, age, gender, income, occupation, number of adults and children in the household. Lamb consumption habits included: consumer preferences for lamb, Appreciator: 'I enjoy lamb. It's an important part of my diet', Lamb is important: 'I like lamb well enough. It's a regular part of my diet', Indifferent: "I do eat some lamb although, truthfully it wouldn't worry me if I didn't', Rarely/never eat: 'I rarely/never eat lamb'; and preferred cooking doneness ranging from 'blue' to 'well-done'. Table 1. shows the distribution of demographics across meat preference categories. The effect of sheepmeat preferences on EQ scores was analysed using linear mixed effects models in SAS with fixed effects of country, age, gender, income, occupation, children in household, adults in household, frequency of lamb consumption, importance of lamb in diet, and doneness. Frequency of lamb consumption was fitted within country as different scales were used in each country. Random terms included consumer identification within tasting session by country, and animal within sire identification.

### Results

In partial agreement with our hypothesis, an increased appreciation of sheepmeat in the diet had a positive effect on average liking of flavour scores (P<0.05), however there was no difference between the three countries, and no impact on tenderness, juiciness or overall liking. Between rarely/never eat lamb and higher appreciation categories, a 2.9 to 3.9 flavour score improvement was observed. Preferred cooking doneness had an impact on average juiciness scores (P<0.05), but did not extend to tenderness, flavour or overall liking. On average, consumers who preferred their meat cooked to medium-rare doneness scored their samples 2.6 and 3.4 scores lower than those preferring medium-well or well-done sheepmeat. The small magnitude of effect aligns with previous research [2, 3], however was not observed consistently across EQ traits demonstrating that overall there was a negligible impact of meat preferences on EQ scoring.

### Conclusion

These findings demonstrate meat consumption preferences have minimal impact on eating quality of sheepmeat for American, Chinese and Australian consumers, reinforcing consumer scoring tends to be consistent despite diverse cultural backgrounds. This demonstrates that studies using MSA protocols need not balance for consumer demographics in their design.

### References

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| Demographic categories | Total number of consumers in each category | | | | | | |
|---|---|---|---|---|---|---|---|
| Importance of lamb in the diet | Appreciator of lamb | Lamb is important | Indifferent to lamb | Rarely/never eat lamb | UR | | |
| Australia | 212 (0.29) | 318 (0.44) | 175 (0.24) | 15 (0.02) | | | |
| China | 41 (0.06) | 209 (0.29) | 447 (0.62) | 23 (0.03) | | | |
| USA | 49 (0.07) | 102 (0.14) | 244 (0.34) | 316 (0.44) | 9 (0.01) | | |
| Degree of doneness | Blue | Rare | Medium/rare | Medium | Medium/ well done | Well done | UR |
| Australia | 2 (0) | 24 (0.03) | 236 (0.33) | 203 (0.28) | 182 (0.25) | 73 (0.1) | |
| China | 0 (0) | 0 (0) | 2 (0) | 14 (0.02) | 171 (0.24) | 533 (0.74) | |
| USA | 0 (0) | 27 (0.04) | 205 (0.28) | 186 (0.26) | 200 (0.28) | 68 (0.09) | 34 (0.05) |

**Table 1.**

Number of consumers (and proportionate distribution) within each meat preference category
UR = Unreported