

Systematic Review Protocol

Title

What are the behavioural drivers and barriers of Chinese ivory consumption? A qualitative systematic review and thematic synthesis

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Corresponding author's email address

molly.brown@york.ac.uk

Keywords

Ivory, demand, behaviour, drivers, barriers

Background

African elephants (*Loxodonta africana*; *L. cyclotis*) are endangered species that play critical roles in African ecosystems and cultural heritage. They are also essential for the economic revenue generated through tourism in many of their 37 range states. However, increased poaching due to ivory demand, particularly during the early 2000s to around 2012, significantly contributed to the decline in African elephant populations (Huang and Weng 2014; Hauenstein et al. 2019). In China, specific efforts to reduce ivory demand have been in place since the early 2000s (Gabriel et al. 2011; Balmford et al. 2021). These interventions align with more comprehensive global and national commitments to enhance law enforcement, change policies, and improve education to reduce ivory poaching and demand (Wright et al. 2016; Zhou et al. 2018; Hauenstein et al. 2019). Recent calls support the integration of behavioural science into these efforts (MacFarlane et al. 2022). Despite the illegality of ivory purchases in China today, seizure records reveal ongoing Chinese demand. Ivory is perceived as a status symbol, granting consumers, including owners, purchasers, gifters, and inheritors, increased social capital. This is because of its perceived value in social, cultural, aesthetic, historical, and financial terms, reflecting purity, beauty, nobility, and rarity. Influencing the underlying normative values that drive these perceptions is extremely challenging, especially given the illicit nature of ivory trade today. Therefore, behavioural change methods must address these cultural and social elements of ivory consumption to achieve effective behaviour change. This paper outlines a systematic review protocol to explore the behavioural drivers and barriers of Chinese ivory consumption, with the aim of informing more effective behaviour change interventions. The findings of this research will be valuable for conservationists and behaviour change practitioners designing future demand management strategies for ivory.

Theory of change or causal model

Current normative values around ivory continue to fuel the trade in China. If we can better understand/identify the drivers of these normative values (e.g., cultural and social elements) it will illuminate more effective behavioural interventions to help stem the trade in ivory.

Stakeholder engagement

The objectives and research questions in this paper have arisen due to the scientific enquiry of the

authors, with anticipated significant impacts on conservationists and demand management and behaviour change practitioners.

Objectives and review question

Primary research question: what are the behavioural drivers and barriers of Chinese ivory consumption? Secondary question: what are the contextual behavioural drivers and barriers for Chinese ivory ownership, gifting and inheritance?

Definitions of the question components

The search strategy and inclusion criteria were developed using the Sample, Phenomenon of interest, Design, Evaluation, Research type (SPIDER) tool. This tool is an alternative to the PICO system that has been developed specifically for qualitative syntheses (Cooke, Smith, and Booth 2012). Sample - Chinese consumers, or Chinese consumers travelling abroad, e.g., in Southeast Asia where ivory can be found in open retail markets. Phenomenon of interest - behavioural drivers and barriers of ivory consumption. Design - interviews, surveys, questionnaires, focus groups, intervention experiments, workshops. Evaluation - behaviours, motivations, values, beliefs, perceptions, experiences, attitudes. Research type - qualitative, quantitative and mixed-methods studies.

Search strategy

For the proposed review, we will search for peer-reviewed, published and grey literature in three bibliographic databases and four organisational websites. This review aims to identify drivers and barriers of Chinese ivory consumption, and so only English and Chinese (simplified and traditional) language searches will be conducted. The reference processor Zotero will be used to import, collate, and convert references to allow importation to the online evidence synthesis tool Covidence. No restrictions regarding the time of publication will be used. The review team's University affiliated subscriptions to the bibliographic databases will be used. The three bibliographic databases Web of Science, Scopus, and China National Knowledge Infrastructure (CNKI) will be searched for published and peer-reviewed papers. We will also search specialist organisational websites for additional peer-reviewed articles and relevant grey literature. These include TRAFFIC International (<https://www.traffic.org/>), Change Wildlife Consumers (CWC) (<https://www.changewildlifeconsumers.org/>), USAID Reducing Demand for Wildlife Resources on Consumer Demand Reduction Materials (<https://www.usaidrdw.org/resources/>) and the World Wide Fund for Nature's Wildlife Conservation publications (<https://www.worldwildlife.org/publications>).

Bibliographic databases

All identified publications will be screened using the following search strings in the bibliographic databases. The bibliographic databases Web of Science and Scopus will be searched in English, and China National Knowledge Infrastructure (CNKI) will be searched in Mandarin Chinese (simplified and traditional characters). In all three databases the topic field for searching the title, abstract and keywords will be used to find the relevant literature based on the search strings (found in the additional file "Search strings (EN and CH)"). In the different databases the topic fields are referenced differently: in CNKI it is Subject (SU), in Web of Science it is Topic (TS), and in SCOPUS it is TITLE-ABS-KEY. The * is used as a wildcard character in the English search strings, and will allow any variation and number of characters. No stopping criteria will be used in either language search strings. All search term blocks will be combined using the boolean operator AND, and terms within the blocks will be combined using the Boolean operator OR unless otherwise specified. Three blocks will be used: block one defines the relevant population; China, block two identifies the subject of the phenomenon of interest; ivory, and block three identifies the outcomes; behavioural drivers or barriers of ivory consumption. The search strings for the bibliographic databases searches in English and Chinese are uploaded as an additional file.

Web-based search engines

N/A

Organisational websites

We will search specialist organisational websites for additional peer-reviewed articles and relevant grey literature. These include TRAFFIC International (<https://www.traffic.org/>), Change Wildlife Consumers (CWC) (<https://www.changewildlifeconsumers.org/>), USAID Reducing Demand for Wildlife Resources on Consumer Demand Reduction Materials (<https://www.usaidrdw.org/resources/>) and the World Wide Fund for Nature's Wildlife Conservation publications (<https://www.worldwildlife.org/publications>). Searches will be done using the key words "China" AND "ivory" and the Mandarin Chinese equivalents. A decision-tree format is used by the CWC website for finding resources, and so all records available under the website sections "Behaviour - Consumers" and "Wildlife - Elephants" will be extracted for screening to ensure comprehensive appraisal of all possible studies related to our topic.

Comprehensiveness of the search

We identified seven benchmark publications based on the expertise of the review team, independent of the search strategy. These studies contribute significantly to the subject area by focusing on the underlying behaviours of Chinese consumers that cause a desire or rejection of ivory. The search strategy was developed by reviewing the benchmark publications, brainstorming with the author team, and conducting searches in synonym databases. To assess the comprehensiveness of the search strategy, we revised our search strategy until all seven benchmark publications were returned during preliminary testing. We consider both peer-reviewed and grey literature for this review, which comprehensively addresses the research objective.

Search update

After the search is completed, no further search update is planned for during the review.

Screening strategy

Using the platform Covidence, all identified articles will be screened for relevance. This screening will be done in two steps. First, all articles will be screened at the title, abstract, and keyword level. If this first level of screening does not allow for an exclusion based on one of the non-fulfilled eligibility criteria (see below), the full-text will then be read, forming the second screening level. At both screening levels, the reviewer will evaluate each publication by answering 'yes', 'no', or 'unsure' to whether the study: (1) took place in China or is about Chinese consumers, (2) specifically addresses consumption of ivory products, and (3) assesses consumer behaviours, values, beliefs, perceptions, experiences, attitudes. Based on these answers, each publication will be labelled as 'include', 'exclude', or 'unsure'. All publications labelled 'include' or 'unsure' at the first step, will then be screened at the full-text level, and reviewers will tend towards inclusion. Relevant information will be extracted at the full-text level using a customised data extraction form in Covidence. All publications labelled 'unsure' after full-text screening will be checked by two other reviewers, and if uncertainty remains, the publications will be discussed by the full review team. Reviewers will not evaluate publications on which they are listed as co-authors.

Eligibility criteria

Reviewer decisions will be guided by a predetermined set of inclusion criteria. The inclusion criteria are as follows according to the SPIDER components: the sample must be of Chinese consumers, either domestically or abroad. All studies must address the phenomenon of interest of assessing behaviours influencing ivory consumption, specifically the behavioural drivers that create a desire for ivory or the behavioural inhibitors that steer consumers away from or against consumption. Eligible studies will be designed using methods such as interviews, surveys, questionnaires, focus

groups and workshops to assess consumer behaviour. All studies must evaluate the behavioural motivating or inhibiting factors of Chinese ivory consumption. All studies must be of qualitative, quantitative or mixed-methods research type.

Consistency checking

The review team will divide the screening into two steps, where two reviewers will screen 100% of all articles during both phases. First, after duplicate removal, all articles will be screened at the title, abstract, and keyword level. Second, all articles labelled as 'yes' or 'unsure' in the first step, will then be screened at the full-text level. If the reviewers disagree on an article, it will be discussed between the reviewers and the use of the exclusion criteria form will be revisited to ensure their rationale approaches are aligned. If an agreement cannot be reached between the two reviewers, a third reviewer will be brought in from the wider author team to reach a decision.

Reporting screening outcomes

The outcomes of the screening will be reported as a compiled list of articles based on the inclusion criteria. Additionally, a supplementary file will record the number of articles excluded at each screening phase using the standardised ROSES flowchart. During full-text screening, we will document the studies that did not meet the criteria and provide the rationale for their exclusion using a rationale form embedded into Covidence.

Study validity assessment

The Critical Appraisal Skills Programme (CASP) Qualitative Checklist will be used to appraise the methodological quality of the included qualitative and mixed-methods studies. This 10-item quality assessment tool is commonly employed in systematic reviews of qualitative evidence. Studies will be rated as 'high quality' if they meet at least 8 of the 10 criteria, 'medium quality' if they meet 5-7 of the criteria, and 'low quality' if they meet 4 or less. If a study uses a quantitative design or an intervention experiment, the 11-item CASP Randomised Controlled Trial Checklist will be used for critical appraisal.

Consistency checking

Each study screened at full-text level will be reviewed by at least two members of the review team who will both conduct a CASP Checklist for each study. Consistency across reviewers appraisals will be checked and all disagreements will be discussed until consensus is reached. Criteria will be clarified if needed.

Data extraction strategy

Data will be extracted from all records labelled as 'included' or 'unsure' at full-text screening. A customised data extraction form will be embedded in Covidence. Apart from bibliographic information, study context, design and research type, we will extract data on: behaviours, intentions, attitudes, and motives that drive, enable or inhibit ivory consumption, contextual setting(s) where these behaviours take place, and the factors influencing the magnitude of these behaviours. All results will be downloaded from Covidence and then thematically analysed in Nvivo 12 software by the lead reviewer, which all other authors will provide feedback on.

Meta-data extraction and coding strategy

See previous section.

Consistency checking

Each publication's data and critical appraisal will be reviewed by two authors. In the case of a disagreement, a third reviewer will review the data and it will be discussed as a team.

Potential effect modifiers/reasons for heterogeneity

Heterogeneity is expected across the studies due to the differences in study design and data collection methods that could be used to approach the topic. For example, differences may arise due to the location of the sample, subgroups of the sample such as age and socio-economic demographics.

Type of synthesis

We will take a narrative and qualitative synthesis approach to synthesising the publications on the behavioural drivers and barriers of Chinese ivory consumption.

Narrative synthesis methods

We will provide a narrative synthesis of data extracted for this systematic review, which will describe the findings and the quality of the studies and include a summary of the critical appraisal.

Quantitative synthesis methods

N/A

Qualitative synthesis methods

Thematic synthesis will be used to synthesise the findings. Text under the 'results' or 'findings' sections from each study will be synthesised in NVivo 12 software. The lead reviewer will perform the usual three-step process of thematic coding whereby the text is coded 'line-by-line', then the 'descriptive themes' are developed and lastly the 'analytical themes' are then generated. This qualitative approach will analyse and synthesise the findings related to behavioural drivers and/or barriers for ivory consumption in China.

Other synthesis methods

N/A

Assessment of risk of publication bias

To test for publication bias, if there is sufficient quantitative data, we will use the standard approaches of using Funnel plots and Egger's tests.

Knowledge gap identification strategy

Knowledge gaps will be identified in terms of psychological factors, location of study sites, and consumer profiling.

Demonstrating procedural independence

To ensure impartiality during screening, if a review team member is an author(s) of a study to be considered, they will have no role in decisions regarding inclusion or critical appraisal, and other reviewers will do this instead.

Competing interests

The review authors declare they have no competing interests.

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Author's contributions

MB, VW and CB conceived the study and formed the research questions. MB developed the protocol with input from all the authors. MB and SG will carry out the review searches, screening and data

extraction. Any disagreements will be discussed as a full author team to reach a final decision. MB will analyse the data with input from all authors. MB will write the manuscript and all authors will contribute to revisions.

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References

Balmford, Andrew, Richard B. Bradbury, Jan M. Bauer, Steven Broad, Gayle Burgess, Mark Burgman, Hilary Byerly, et al. 2021. "Making More Effective Use of Human Behavioural Science in Conservation Interventions." *Biological Conservation* 261 (September): 109256. Cooke, Alison, Debbie Smith, and Andrew Booth. 2012. "Beyond PICO: The SPIDER Tool for Qualitative Evidence Synthesis." *Qualitative Health Research* 22 (10): 1435–43. Gabriel, Grace G., Ning Hua, and Juan Wang. 2011. "Making a Killing: A 2011 Survey of Ivory Markets in China." IFAW. https://d1jyxxz9imt9yb.cloudfront.net/resource/670/attachment/original/Making_a_Killing.pdf. Gobush, K. S., C. T. T. Edwards, D. Balfour, G. Wittemyer, F. Maisels, and R. D. Taylor. 2021. "IUCN Red List of Threatened Species: *Loxodonta Africana*." 2021. <https://www.iucnredlist.org/species/181008073/204401095>. Gobush, K. S., C. T. T. Edwards, F. Maisels, G. Wittemyer, D. Balfour, and R. D. Taylor. 2021. "IUCN Red List of Threatened Species: *Loxodonta Cyclotis*." 2021. <https://www.iucnredlist.org/species/181007989/204404464>. Hauenstein, Severin, Mrigesh Kshatriya, Julian Blanc, Carsten F. Dormann, and Colin M. Beale. 2019. "African Elephant Poaching Rates Correlate with Local Poverty, National Corruption and Global Ivory Price." *Nature Communications* 10 (1): 2242. Huang, Shiyang, and Qiang Weng. 2014. "China's Ivory Market: The Elephant in the Room." *Science* 343 (6171): 611. MacFarlane, Douglas, Mark J. Hurlstone, Ullrich K. H. Ecker, Paul J. Ferraro, Sander Linden, Anita K. Y. Wan, Diogo Veríssimo, et al. 2022. "Reducing Demand for Overexploited Wildlife Products: Lessons from Systematic Reviews from Outside Conservation Science." *Conservation Science and Practice* 4 (3). <https://doi.org/10.1111/csp2.627>. Wright, M. Elisson, Bhammar, Hasita Mukeshkumar, Gonzalez Velosa, Ana Maria, Sobrevila, and Claudia. 2016. "Analysis of International Funding to Tackle Illegal Wildlife Trade." <https://documents.worldbank.org/en/publication/documents-reports/documentdetail/695451479221164739/analysis-of-international-funding-to-tackle-illegal-wildlife-trade>. Zhou, Xuehong, Qiang Wang, Wei Zhang, Yu Jin, Zhen Wang, Zheng Chai, Zhiqiang Zhou, Xiaofeng Cui, and Douglas C. MacMillan. 2018. "Elephant Poaching and the Ivory Trade: The Impact of Demand Reduction and Enforcement Efforts by China from 2005 - 2017." *Global Ecology and Conservation* 16 (October): e00486.

Authors and Affiliations

<u>Name</u>	<u>Country</u>	<u>Affiliation</u>
<u>Molly Brown</u>	<u>United Kingdom</u>	<u>Leverhulme Centre for Anthropocene Biodiversity, University of York, Harewood Way, York, YO10 5DD, UK; Department of Biology, University of York, York, YO10 5DD, UK</u>
Shuo Gao	United Kingdom	Interdisciplinary Centre for Conservation Science, Department of Biology, University of Oxford, Oxford, UK
Victoria Wells	United Kingdom	School for Business and Society, University of York, York, YO10 5DD, UK
Colin Beale	United Kingdom	Department of Biology, University of York, York, YO10 5DD, UK

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