REVIEW

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Assessing demand reduction measures for rhino horn consumption

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Abstract

A review of studies that segmented consumers based on their willingness to consume rhino horn are given to identify the various motivational drivers and deterrents of illegal wildlife consumption in China and Vietnam. Medicinal motivations are the most significant stimuli for both Vietnamese and Chinese consumers who believe that the horn treats ailments. A review of campaigns that were developed to generate an awareness of the plight of this endangered species is conducted to highlight the problems of the celebrity-product degree of fit and eclipsing in the advertisements. We recommend that additional consumer behavior research on demand-reduction strategies for rhino horn should examine gateway behaviors that initiate consumption; evaluate the viability of diverting demand to substitute products (e.g., synthetic alternatives); investigate the counterfeit market for rhino horn and draw analogies from anticounterfeiting messages to decrease demand for an illicit product; and employ benchmarks to implement and assess the validity of campaigns targeted at Asian consumers to decrease demand. A few research methods are suggested based on the recommendations for future research.

KEYWORDS
behavior change communications, celebrity endorsements, consumer demand for rhino horn, illegal wildlife product, motivational clusters, societal behavior controls

1 | INTRODUCTION

The media is replete with statements that rhino horn is more valuable than gold and some would argue that it is a Veblen good—that newly affluent Asian consumers will pay any increase in price for the illegal wildlife product (Burgess, 2017; Reeves, 2017). WildAid (2018a, p. 9) reported a significant decline in the wholesale prices of whole raw rhino horns given to them by undercover investigators from an estimated average price of $60,000 per kilogram (kg) in 2012–2014 to $18,000/kg in 2016–2017. The price of a kilogram of gold (2020) is currently $60,030 (September 2020; goldprice.com). Save the Rhino International requests that the "market value" of rhino horn should not be transparent and published since the exorbitant prices will encourage more poaching of the animal (Save the Rhino International, 2017).

The death of the last male white rhino in 2018, "Sudan, the gentle giant" symbolized to many conservationists the danger of extinction facing this species. Table 1 illustrates the estimated population levels of the five species of rhino (Javan, Sumatran, Black, Greater one-horned, and White), the location, and the classification of the International Union for Conservation of Nature (IUCN). These numbers are alarming but must be placed in a historical context since some of these species survived near extinction in other time frames, such as the black rhino population fell from 70,000 in 1970 to 2410 in 1995 (Save the Rhino International, 2019). However, three of the five species are still critically endangered, and the poaching figures listed in Figure 1 illustrate the uptick in this illicit trade since 2006. In addition to poaching, these animals are also threatened by a loss of habitat (e.g., human settlement and agricultural production) and political conflict (e.g., war zones and corruption).

TABLE 1 Estimated global population of rhinos

Type of rhino	Location/IUCN red list classification	Estimated population
Javan	Indonesia/critically endangered	69
Sumatran	Indonesia/critically endangered	<80
Black	Africa/critically endangered	5366–5627
Greater one-horned rhino	India and Nepal/vulnerable	3500+
White rhino	Africa/near threatened	17,212–18,915

Source: Adapted from Save the Rhino International. Retrieved from https://www.savetherhino.org/rhino-info/population-figures/

Abbreviation: IUCN, International Union for Conservation of Nature.

Most of the research on wildlife crime has focused on the supply side of the problem, such as issues of governance and regulation, corruption risks, and criminal syndicates that facilitate the illegal trafficking and poaching of wildlife (Christy & Stirton, 2016; OECD, 2019; Organization for Economic Cooperation and Development [OECD], 2018). However, these studies do not examine the underlying motivations (or deterrents) that stimulate the consumer demand for illegal wildlife products (Wallen & Daut, 2017). The need to develop a better understanding of the demand side of the problem is crucial to work in conjunction with supply-side measures to protect this endangered species (Burgess, 2017).

Studies have primarily focused on the consumer demand for elephant ivory, rhino horn, pangolin scales, and tiger parts among Chinese or Vietnamese consumers (e.g., Globescan, 2018; Kennaugh, 2016; U.S. Agency for International Development [USAID] Wildlife Asia, 2018). The research employs mainly descriptive statistics to indicate the frequency and intentions to consume, the socio-demographic variables that describe highly complicit consumers, the drivers that motivate (discourage) the use of the wildlife product, the primary influencers that fuel the decision to consume (e.g., business colleagues), and purchase occasions that stimulate demand (e.g., Lunar New Year).

A few studies have initiated work on mapping incentives to consume wildlife product by identifying motivational clusters that underlie the primary desire to consume, such as an emotional (e.g., social gain) and/or functional (e.g., nutritional benefits) appeal (Burgess, 2017; Thomas-Walters, 2018). Other work has addressed the role of social marketing measures to act as a catalyst to decrease consumption (Greenfield & Verissimo, 2019; Wallen & Daut, 2018). However, significantly more research is necessary to identify other behavioral aspects of illicit consumption, such as price sensitivity, the role of counterfeits to diminish demand, and whether substitute products can replace natural rhino horn. A comprehensive evaluation of past campaigns targeted at consumers, such as celebrity endorsements in WildAid campaigns designed to raise awareness of the rhino problem is another area of future research (Ford, 2018). For example, measures of success of these campaigns must yield more than "recall" metrics and benchmarks should be employed to design future campaigns and assess whether the messaging tactics employed altered consumer demand for rhino horn in Vietnam and China (Burgess et al., 2018).

This article is organized as follows. We succinctly summarize research that examines consumers' willingness to consume rhino horn in China and Vietnam by evaluating the relevance of
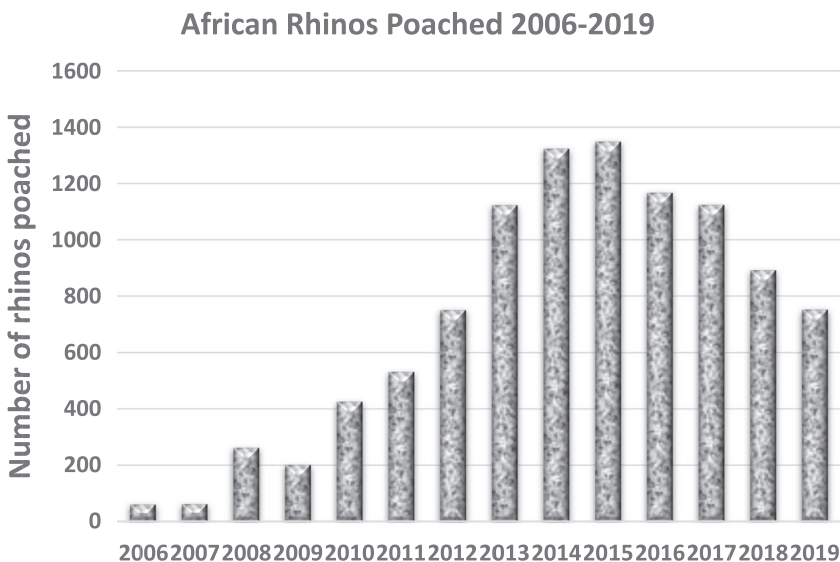

FIGURE 1 Rhinos poached in Africa. *Source*: Adapted from Save the Rhino International. Retrieved from https://www.savetherhino.org/rhino-info/poaching-stats/

motivational clusters and other drivers (deterrents) of consumption. We assess the primary sociodemographic profiles of frequent users of rhino horn and their intentions to purchase. The "influence of others" (e.g., friends) and purchase occasions are explored to highlight triggers for demand—such as using the rhino horn product with friends to celebrate a job promotion. A discussion of societal behavior controls, such as measures employed to align government stakeholders to make policy changes; and behavioral change communications, such as celebrity endorsements designed to create an awareness of the plight of this endangered species is given. The final section provides an array of recommendations for future research and possible methods to study these suggestions.

2 | LITERATURE REVIEW

The literature on drivers of illegal wildlife consumption has addressed the need to understand key consumer market segments, identify usage patterns and purchase channels, uncover the consumer motivations (disincentives) for obtaining illegal wildlife, and assess the relevance of marketing communications to reshape consumer behavior (Change Wildlife Consumers, 2017; Greenfield & Verissimo, 2019; Thomas-Walters, 2018; USAID Wildlife Asia, 2018). Prior survey research provides descriptive narratives of purchasing habits (e.g., frequency and intentions to purchase), primary use of the wildlife product (e.g., for medicinal purpose), and sociodemographics (e.g., age, income, and gender) to profile the consumers of illegal wildlife products in China and/or Vietnam (e.g., Change Wildlife Consumers, 2017; USAID Wildlife Asia, 2018).

2.1 | Motivational clusters and other drivers of consumption

In 2012, in-depth interviews of a small sample of Vietnamese consumers (*n* = 34) in both Hanoi and Ho Chi Minh City (HCMC) identified four key emotional motivations for the consumption of rhino horn: a *symbol of power* (strength of the animal), *assurance I did the best* (to cure cancer), *peace of mind* (storing it to treat diseases), and a *symbol of wealth* (status symbol) (Change Wildlife Consumers, 2017). On the basis of this qualitative analysis, a narrative profile of the principal consumer of rhino horn in Vietnam—the "Mr. L" consumer was described by his attitude (powerful, traditional lifestyle), intentions to use and willingness to obtain (high), beliefs (health and social benefits), and subjective norms (perceptions that peer groups support consumption). In-depth interviews of the "Mr. L" consumer uncovered statements given to justify the consumption of rhino horn: "If rhinos go extinct, I feel sorry, but it's normal, dinosaurs went extinct but nothing happens," "It's poachers who kill them not me, I only buy it" and "That animal lives in the forest, we have never seen them, so if it's extinct, perhaps nothing impacts to our life" (Change Wildlife Consumers, 2017, p. 9).

Burgess (2017) identified 10 motivational clusters to explain the rational that drives the purchase of wildlife goods. The clusters are

cultural (use for tradition), *emotional* (fulfill hedonistic pleasure), *financial* (stockpile horn as an investment), *functional* (use every day), *nutritional* (use for food), *medicinal* (use for wellness), *recreational* (use in leisure activity), *reputational* (gain "face" in a business transaction), *social* (image/status symbol), and *spiritual* (brings good fortune). These clusters are not mutually exclusive and overlap with one another, such as the perceived medicinal properties of rhino horn consumption are also linked to a cultural tradition. Likewise, the status of consuming rhino horn and/or owning a dagger with a rhino horn embellishment is related to both a social and emotional motivations.

Thomas-Walters (2018) employed this typology of clusters to test the relevance of these motivations on the consumption of rhinos, elephants, and pangolins in Vietnam. Two primary motivational clusters were articulated for the consumption of elephants, rhinos, and pangolins: (1) emotional and reputational; and (2) functional and medicinal. A *reputational motivation* incited rhino horn uses due to perceived status and strengthening of business relationships among educated and wealthy persons in Vietnam. The *medicinal motivation* stimulated rhino horn use in Vietnam for wealthy men, business elites/state officials, to detoxify the body. Another study of Chinese consumers (*n* = 1800) established that the major motivations driving rhino horn consumption were also a *medicinal motivation*—perceived as a cure for ailments; but these consumers are also driven by the *spiritual cluster*—the horn brings good luck, fortune, and power and the *social cluster*—the horn incites a sense of belonging and social acceptance (USAID Wildlife Asia, 2018, p. 35).

Truong et al. (2016) surveyed 608 respondents in Vietnam and found that 47.2% (*n* = 287) had used rhino horn with the sample almost evenly split between consumers in Hanoi (*n* = 142) and Ho Chi Minh City (*n* = 145). The key drivers for rhino horn were health-related motivations, primarily as a cure for hangovers and detoxification. However, the reported use of rhino horn for other life-threatening diseases, such as cancer, was negligible for the participants of this study. Another incentive was using the horn to strengthen business relationships, such as a gift (Truong et al., 2016). A summary of various purchasing drivers of rhino horn consumption is given in Table 2.

2.2 | Deterrents of consumption

The expense of rhino horn has lured trade in fakes—products that are derived from other animals, such as buffalo or cow horn, and other materials such as plastic (Barnes, 2015). Truong et al. (2016) reported that consumers of rhino horn in Vietnam were mainly deterred by the likelihood of purchasing fake rhino horn and the inability to authenticate the product. An undercover journalist who purchased the rhino horn in Hanoi was reassured of the authenticity of the product by a seller who showed a permit to kill two rhinos in South Africa and a photo of his son standing near the dead rhino (Roberts-Lloyd, 2014). However, very little research has examined the sale of counterfeit rhino horn—one expert argued that fake rhino horn has spurred demand in online marketplaces (Shelley, 2018).

TABLE 2 Motivational clusters of rhino horn consumption

Motivational clusters	Purchase drivers of rhino horn
Emotional	To fulfill a hedonistic pleasure (e.g., sexual aphrodisiac)
Recreational	To use as part of a recreational activity (e.g., hangover cure)
Reputational	To give "face" to others (e.g., gift giving in business settings to show respect)
Social	To impress a peer group with wealth status (e.g., objects adorned with rhino horn—daggers, carvings, jewelry)
Functional (nutritional and medicinal)	To use daily and/or for a specific function (e.g., belief that rhino horn cures cancer; detoxifies the body)
Financial	To secure as an investment (e.g., perceptions of future rhino extinction make the product an asset)
Spiritual	To acquire good luck or fortune in business or life
Cultural	To use in recognition of cultural heritage or tradition

Source: Adapted from Burgess (2017). Powers of persuasion? Conservation communications, behavioral change, and reducing demand for illegal wildlife products. Retrieved from https://www.traffic.org/site/assets/files/3385/powers-of-persuasion.pdf

Scientists have recently developed realistic fake rhino horn made from horsehair that is indistinguishable to the consumer and plan to flood the market to provide a disincentive for consumers to buy the horn (Nuwer, 2019). The economic premise of this tactic is if you provide the market with a counterfeit product, the consumer will not buy the horn due to doubts about its authenticity and the price will significantly drop and the poachers will no longer have the profit motivation. Whether this demand-reduction plan launched in November 2019 is effective remains to be seen—some are skeptical and believe that the fake horn will simply stimulate more demand for the real rhino horn (Nuwer, 2019).

Another disincentive is the perceived price/quality tradeoff to discern whether the expensive rhino horn is effectively treating the medical problem. Both linkages to organized crime and the high risk of buying fakes were the two most important disincentives given by Chinese consumers to purchase rhino horn (USAID Wildlife Asia, 2018). The Chinese consumers were somewhat concerned about penalties for violating the laws, but less concerned about the possible extinction and killing of rhinos. The research summarized two narratives to describe Chinese consumers who did not use rhino horn: (1) a person who does not believe the horn provides any medicinal effect or bolsters social status—he/she is more concerned about the potential "loss of face" (respect) from using an illegal product; and (2) a person who is sensitive to the cruelty of poaching and plausible extinction of rhinos and does not believe the horn enhances his masculinity and is adverse to using an illicit product (USAID Wildlife Asia, 2018, p. 35).

2.3 | Sociodemographic variables

Several of the studies use general sociodemographic characteristics to describe the consumers' willingness (or unwillingness) to consume illegal wildlife products. The variables usually measured in the

surveys are education, marital status, occupation, income, and household composition (Change Wildlife Consumers, 2017; Globescan, 2018). Survey research conducted on rhino consumption in Vietnam developed a "Mr. L" profile: 35–55 years old, married with children, high-income, focused on career and social status, influenced by peers and business contacts, a leader, and confident. This profile was used as a basis for the Chi Initiative to target campaign adverts, such as "Wise men know the truth. They use natural means to keep their body free of toxins. Vitality comes from lifestyle, not from a piece of horn." The USAID Wildlife Asia (2018, p. 11) study of consumers in China (n = 1800) described frequent purchasers of rhino horn (past 12 months) as almost evenly split on gender (female 46%; male 54%), 31–40 years old (40%), moderately (67%) to highly (26%) educated, and middle- (55%) to low-income income (28%).

2.4 | Intentions to purchase

Most empirical work on consumer demand measure the "intentions" and "frequencies" of illegal wildlife consumption (Globescan, 2018; USAID Wildlife Asia, 2018). The main variables include the consumer's self-report of purchasing in the past (usually last 12 months) and expected in the future—only a few studies have addressed the need to discern "frequent vs. opportunistic consumption" (Burgess et al., 2018). The government legislation that enforced the ivory ban in China on December 31, 2017 allowed researchers the opportunity to test consumer behavior before and after the ban to gauge a change in ivory consumption. On the basis of this pre- and postban data, a decision tree statistical algorithm was employed to create three distinct consumer segments based on their intentions to purchase and willingness to recommend ivory products: "Diehard buyers," "Ban Influenced Citizens," and "Rejectors." The "Diehard buyers" will continue to purchase and will recommend the purchase of ivory,

the "Ban Influenced Citizens" have stopped buying after the ban and will not recommend ivory products to family/friends, and the "Rejectors" had not previously purchased nor will buy in the future (Globescan, 2018, p. 71). This type of consumer segmentation based on purchasing habits has not been conducted for rhino horn and should be explored in the future.

2.5 | Influence of others

Thomas-Walters (2018) cautioned the use of a "Western perspective," such as focusing on the role of the individual to evaluate the motivations for consumption in a Vietnamese (or Asian) consumer since an "Eastern perspective" needs to be adopted to ascertain the influence of others in collectivist cultures (Chuang et al., 2015; Wong & Ahuvia, 1998). A few studies have reviewed the impact of business colleagues, family, friends, and spiritual leaders to stimulate the consumption of wildlife products (Burgess et al. 2018; Change Wildlife Consumers, 2017). Truong et al. (2016) explored the role of others to influence a purchase decision for rhinos in both Hanoi and Ho Chi Minh City to gauge whether it was a shared consumption experience and/or the product was given to them. The study results revealed that many of the respondents used rhino horn with friends (57.49%), not by themselves (17.42%). The sources of acquisition of rhino horn were also influenced by others, and respondents reported that "I did not own, just used it with others" (38.33%) and "others gave me" (29.97%). But, another portion of participants had purchased the horn on their own (22.3%) (p. 360).

2.6 | Purchase occasions and channels

A limited number of studies measured the significance of purchase occasions to better understand the reason for obtaining the product, such as a gift for a business colleague (Globescan, 2018; USAID Wildlife Asia, 2018). A survey of Chinese consumers revealed that rhino horn was purchased: to give as a gift to someone (21%); no specific occasion (15%); to cultivate a relationship (10%); and to applaud a promotion at work (10%). Other less important occasions for consuming rhino horn include celebrating the birth of a child (4%); Western New Year (6%); and Chinese New Year (7%) (USAID Wildlife Asia, 2018, p. 17).

Traveling outside of China for either leisure (30%) or business (20%) were listed as primary channels used for Chinese consumers to obtain rhino horn; followed by retail stores (23%), market stalls (23%), and traditional Chinese medicine pharmacies (19%) (USAID Wildlife Asia, 2018, p. 28). As expected, purchasing channels significantly changed for ivory consumption from the pre-ban to postban shopping environments, shifting from in-person shopping (retail store, market stall) to e-commerce platforms, artifact collection websites, social media, and other websites (Globescan, 2018, p. 33).

3 | SOCIETAL BEHAVIORAL CONTROLS

A "Twin-Track Approach" is recommended for many demand reductions campaigns for wildlife (Burgess, 2017; Kitade & Toko, 2016). Track 1 involves actions to establish societal behavioral controls (e.g., policies, legislation, and regulation). The recent enforcement of the ivory ban in China is a current example of a societal behavioral control. Track 2 is behavioral change communication that "involves messaging, issued by messengers influential with target audiences, to shape individual motivation" (Burgess, 2017, p. 2). We highlight examples of both approaches in the next section.

3.1 | Convention on International Trade in Endangered Species

The principal international agency that governs wildlife crime is the Convention on International Trade in Endangered Species (CITES) of Wild Fauna and Flora, drafted as a resolution of members of the World Conservation Union in 1963, and established as an agency in 1975 with 80 signature countries (parties). Today, CITES has 183 parties that cooperate to ensure the survival of a diverse set of animals and plants ranging from rhinoceros to orchids. Both China and Vietnam joined CITES in 1981 and 1994, respectively, and as parties to the Convention are legally bound to implement domestic legislation to govern the trade in wild animals and plants. CITES (2014b; 2015) oversees the protection of rhinoceros by collaborating with other agencies, such as implementing forensic-based technologies to track illegal rhino horn, providing a forum for national customs, police, and wildlife authorities to create new policies to deter poaching of rhino, and collaborating with an array of other agencies, such as the nonprofit TRAFFIC-the wildlife trade monitoring network.

CITES governance is more focused on the supply side of the illicit rhino trade, such as implementation of deterrents for the illegal trafficking of rhino horn, recommendations on further investigations, legislation, prosecutions, anticorruption, and rhino horn stock management (Emslie et al., 2015). However, CITES worked in conjunction with the United Nations, specifically UNTV and its UNStories video outreach program to produce a video, "Rhinos under threat" that graphically portrays the cruelty of poached rhinos to consumers (CITES, 2014a).

3.2 | Regulations in China and Vietnam

A comprehensive timeline of China's wildlife regulation and enforcement is illustrated in Figure 2 and shows critical milestones that commence with its membership to CITES (1981), the ban on ivory trade (2018), and the short-term reversal of its ban on rhino horns and tiger bones that temporarily allowed these products from captive animal populations to be used for medical research (Stephens & Southerland, 2018). The ban on rhino horn and tiger bones was
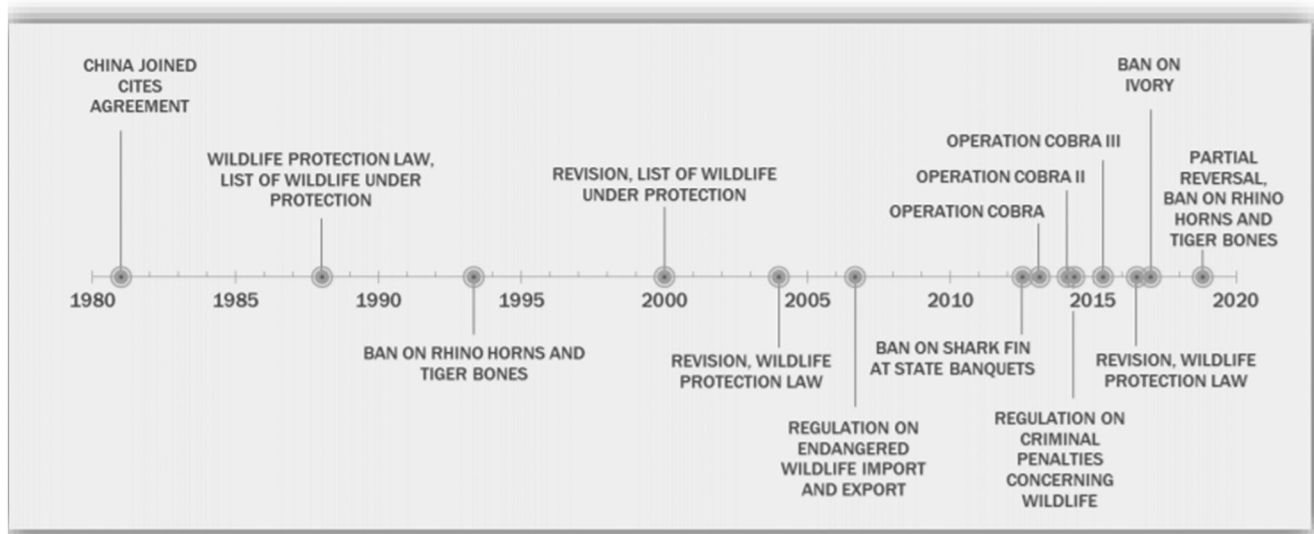
FIGURE 2 China's Wildlife Regulation and Enforcement Actions, 1980–2018. China's role in wildlife trafficking and the Chinese government's response. A report prepared for the U.S.–China Economic and Security Review Commission. Source: Stephens and Southerland (2018, p. 9)

upheld just one month later (November 2018) after a flurry of social media comments and posts from Chinese citizens called for a reversal of this decision. Ding Xuedong, a spokesperson for the State Council stated, "I would like to reiterate that the Chinese government is willing to work with the international community to jointly strive for protecting wildlife and building our harmonious and beautiful planet" (WildAid, 2018b).

As of January 2018, the ban on the sale of elephant ivory in China is an excellent example of using a societal behavioral control to reduce consumption of illegal wildlife goods. The research sponsored by both TRAFFIC and the Word Wildlife Fund (WWF) to measure both the pre-ban and after-ban effects on Chinese consumers clearly illustrates that this legislation significantly increased awareness of illicit wildlife trade and spurred a decrease in consumption (Globescan, 2018). Chinese consumers in the postban study overwhelmingly supported statements like "the ivory ban offers hope for elephants" (87% agreement), "buying ivory is shameful as it is banned" (85%), and "[it] makes me completely stop buying ivory" (83%) (Globescan, 2018, p. 15). However, another research study uncovered that there are regional variations in Chinese consumers regarding the awareness of the illegality and risk of arrest from purchasing rhino horn—consumers in Tier-1 cities, Shanghai (91.1%) and Beijing (77.9%) were more aware than their counterparts in Tier-2 cities, Kumming (70.3%) and Guangzhou (63.3%) (Kennaugh, 2016, p. 16).

Vietnam recently bolstered both its criminal penalties (up to 15 years in prison) and fines (up to $660,000) by amending its penal code to govern the trafficking of wildlife, the killing and transporting of illegal wildlife, and the storing and selling of the product (WildAid, 2018c). However, assessing Vietnamese consumers' knowledge of the illegality of the act is limited and needs to be researched (Change Wildlife Consumers, 2017). Kitade and Toko (2016) provide a

comprehensive case study of the significant decline of ivory and rhino horn trade in Japan (since 1989). One major driver of this decrease in consumption was sociopolitical change that centered on: the international pressure and desire to bolster Japan's country image to comply with CITIES recommendations, generating an awareness of the problem of illegal wildlife trade with consumers, and the lobbying efforts of agencies like TRAFFIC (pp. 7–8).

3.3 | Multilateral organizations, non-governmental organizations, and charities

Several agencies representing multi-lateral organizations, non-governmental organizations (NGOs) and charities are diligently working to save the rhino from extinction and have designed measures to thwart both the supply and demand for rhino horn. For example, the OECD Task Force on Countering Illicit Trade has sponsored a forum at its annual meetings for agencies such as TRAFFIC and the WWF to present the trends in wildlife crime to experts in illicit trade (e.g., Europol, Interpol, U.S. Department of Homeland Security). The OECD Task Force has recently initiated a series of working papers (OECD, 2019) and publications (OECD, 2018) to educate various stakeholders on this aspect of illicit trade since many experts tend to specialize in one aspect of the illegal trade problem, such as counterfeit pharmaceuticals (Chaudhry, 2017). Thus, this type of meeting educates other stakeholders, such as academics, government policymakers, private industry, and enforcement agencies who attend these Task Force meetings.

An in-depth overview of the various agencies that work in conjunction with a multilateral organization like CITIES is beyond the scope of this paper, but key agencies that represent charities and NGOs clearly act as catalysts for both societal behavior controls

(e.g., pressuring countries to enforce domestic laws governing wildlife crime) and behavior change communications (e.g., launching awareness campaigns). Key agency stakeholders working on preserving the rhino population include: the International Fund for Animal Welfare, the IUCN and its Asian Rhino Specialist Group, Save the Rhino International, TRAFFIC, USAID Wildlife, WildAid, and the WWF.

4 | BEHAVIORAL CHANGE COMMUNICATIONS

4.1 | The Chi Initiative

In 2014–2015, a simple logo for the Vietnamese campaign, "Chi" was adopted since this word literally translates as the "strength comes from within." The Chi Initiative employed a social marketing intervention mix to shift the targeted behavior of a "Mr. L" consumer to decrease his consumption of rhino horn for ailments (*medicinal motivation*) and as a status symbol to impress friends and business colleagues (*emotional motivation*). The campaign was primarily launched at sporting events (bike rides; golf clubs), billboards, and a microwebsite. Later, the campaign leveraged partnerships with key organizations, such as the Vietnamese Chamber of Commerce and Industry, and developed a corporate social responsibility tool kit and other events for sponsoring agencies to deliver the campaign messages to their audiences.

Change Wildlife Consumers measured the success of the various campaigns through surveys and reported that "Mr. L" consumption of rhino horn decreased from 27.5% (2014) to 7% (2017). However, this self-reported decrease in consumption was not corroborated with the supply of rhino horn entering the country and other researchers speculated that this may be a result of changing the consumption to a sexual stimulant; not the targeted behavior of wealth and status used in the Chi campaign.

4.2 | Celebrity endorsements

Lavidge and Steiner (1961) developed a psychological model to illustrate three components of consumer behavior: cognitive (i.e., the realm of thoughts); affective (i.e., the realm of emotions) and conative (i.e., the realm of motives) to depict whether advertisements develop an awareness or knowledge (cognitive); and change attitudes and feelings (affective) and/or stimulate the desire to purchase the product (conative). Various studies have used the Lavidge and Steiner (1961) model to investigate the validity of using celebrity endorsements to discern whether the advertisement creates better awareness than noncelebrity endorsements; evokes a positive attitude toward the object endorsed; changes the behavior of the target audience (e.g., purchase intentions or actual purchases); and requires moderators (e.g., an accurate match of the endorser to the object in the ad) to affectively measure the success of the campaign (Keel & Nataraajan, 2012; Knoll and Matthew, 2017).

Keel and Nataraajan (2012) summarized that three key factors should be used to select celebrities for endorsements: (1) credibility (expertize and trustworthiness), (2) attractiveness (physical appeal of a celebrity), and (3) product match-up (the fit between the celebrity's image and endorsed brand). These researchers also suggest the need for more investigation of the concept of "eclipsing" in the ad copy to discern whether the ad content focuses more on the celebrity than the object. There are very limited studies that have researched the effectiveness of celebrity endorsements for social causes and/or nonprofit advertising (Knoll and Matthew, 2017) that leaves a gap in the literature on whether the celebrity persona can be leveraged to influence the three psychological consumer behaviors (i.e., cognitive, affective and conative; Lavidge & Steiner, 1961). The celebrity endorsement of the plight of the rhinos needs to frame the advertisement to (1) create awareness (e.g., I understand that rhinos are an endangered species); (2) change an attitude (e.g., I feel that rhinos must be protected); and (3) stimulate motives to effectively change the consumer behavior (e.g., I will decrease my rhino horn consumption) (Knoll and Matthew, 2017; Santos et al., 2019).

4.3 | Celebrity-product degree of fit

There can be a perceived incongruence between the "endorser" and the "cause," such as the observed relevance and sincerity of the acts of ambassadors for conservation marketing that will affect whether consumers believe the celebrity is really involved in protecting the wildlife species or simply bolstering his/her profile (Duthie et al., 2017). Santos et al. (2019) modeled the "celebrity-product degree of fit" by looking at the antecedents of a perceived celebrity personality profile (i.e., extraversion and conscientiousness); celebrity attributes (e.g., credibility and trustworthiness); level of consumer involvement with the product (high/low); and social acceptance/corporate social responsibility to gauge the consumer's willingness to pay for the product or make a donation to the cause.

The researchers surveyed consumers on Facebook to determine the degree of fit for Emma Watson, Jennifer Lawrence, Kim Kardashian, Natalie Portman, and Scarlett Johansson in four distinct types of branding scenarios. The first scenario involved two affective and hedonistic products: lipstick (low-involvement) and a watch (high-involvement). The second scenario gauged the level of social acceptance and whether the actor fit the endorsement of vodka (low-social acceptance) versus an ecofoundation (high-social acceptance). This novel research clearly illustrated that consumers do perceive celebrity personalities and attributes differently based on the concept of celebrity-product degree of fit. Scarlett Johansson rated the highest degree of fit for endorsing both lipstick and a watch; Kim Kardashian matches the concept of launching her own vodka brand; and Emma Watson was the best spokesperson for an ecofoundation (Santos et al., 2019).

There are more than 100 celebrity endorsers listed at the WildAid website that represent Asian, African, and "Western" personalities from business, film and television, music, sports, politics, religion, and the like. Table 3 highlights a few of these celebrities and their causes

TABLE 3 Celebrity ambassadors and causes

WildAid ambassador	Causes
Richard Branson	Mantas, sharks, tigers, and rhinos
David Beckham	Rhinos, elephants, and sharks
Li Bingbing	Elephants, rhinos, and climate
HRH Prince William	Sharks, rhinos, and elephants
Jay Chou	Sharks, pangolins, rhinos, tigers, and elephants
Jackie Chan	Tigers, rhinos, pangolins, and climate
Leonardo DiCaprio	Tigers
Yao Ming	Sharks, elephants, and rhinos
Lupita Nyong	Elephants
Maggie Q	Pangolins, sharks, and rhinos

Source: Adapted from WildAid. Retrieved from https://wildaid.org/about/ambassadors/

are listed as ambassadors and have appeared in various WildAid campaigns. The recent work of Santos et al. (2019) should be employed to discern a degree of fit to these celebrities to represent these causes. For example, did the WildAid campaign that used David Beckham, His Royal Highness (HRH) Prince William, and Yao Ming accurately resonate with the targeted audience through the notion of "degree of fit" of their perceived personality profiles and attributes to ultimately change consumer behavior towards rhinos?

Duthie et al. (2017) tested the effectiveness of conservation advertisements using three well-known celebrities David Beckham, Chris Packham, and HRH Prince William versus a noncelebrity, Crawford Allan (Senior Director, TRAFFIC) and found both positive and negative results. Respondents in this study had a higher willingness-to-engage in the ad (i.e., would click on the advert) with one of the celebrities, HRH Prince William, but, the recall of the messaging was more influential in the advert featuring the non-celebrity, Crawford Allan (Senior Director, TRAFFIC). Brown (2010) asserted that a "celebrity hero" such as the deceased Steve Irwin (star of *Crocodile Hunter*) would act as a better role model due to the high involvement of consumers with this type of persona that increased their willingness to support wildlife conservation. In addition, the problem of eclipsing in the public service announcement featuring David Beckham, HRH Prince William and Yao Ming may cause the audience to focus more on these three distinct personalities and less attenuation to the computer-generated rhinos roaming London's Wembley stadium. Knoll and Matthew (2017) found that the most significant advertisement involves selecting a male actor that "matches well" with the endorsement and caution the use of male or female celebrities that are incongruent with the object.

4.4 | Cultural acceptance

The cultural acceptance of celebrity endorsements has received little attention for representing branded products (Knoll and Matthew,

2017; Winterich et al., 2018), and, thus, creates another challenge for developing campaigns for wildlife crime used in multiple countries. Consumer behavior is culture-bound, and celebrity endorsements may need to be adjusted between "East" and "West" consumers. Hofstede's (2019) dimension of power distance (pd) measures the acceptance of a country's population to a disparity of power, such as a social hierarchical order, and was used to explain the effect of celebrity endorsers on advertising and brand evaluations between consumers in a high-pd country (India; pd score of 77) versus a low-pd country (USA; pd score of 40) (Winterich et al., 2018). The results of this study assert that consumers in a high-pd country are more receptive to celebrity endorsements due to their undisputed credibility.

These researchers question the relevance of assessing a product celebrity-fit in high-pd cultures since consumers defer to the celebrity's expertize regardless of fit (Winterich et al., 2018). This recent finding is relevant to current campaigns to decrease rhino consumption in high-pd markets, such as China (pd score of 80) and Vietnam (pd score of 70) and needs to be explored further. In addition, one could argue that some celebrities are truly global personalities, such as Jackie Chan, and can be used in a "one-size fits all" public service announcement. However, several of the WildAid ambassadors listed at the organization's website also represent a regional/country endorsement, such as Thanh Bui, a well-known Vietnamese singer, that serves as an ambassador for saving rhinos in local campaigns (Nga, 2014).

4.5 | Evidence of ad recall

One study of Chinese consumers' perceptions of ivory consumption after the ban provides metrics on both ad recall and the influence of campaigns using two Asian celebrities: Li Bingbing and Yao Ming (Globescan, 2018). The participants surveyed mainly recalled the campaigns from television (23%); Yao Ming (17%); Li Bingbing (13%); the slogan, "When the buying stops, the killing can too" (12%); and social media (11%). Adverts in transportation hubs (e.g., airports, subways) and newspapers/press were reported to be less influential (p. 54). A total of 4 in 10 of the Chinese respondents noticed the actors (Yao Ming and Li Bingbing) and several of them could recall the "brand" association of the WWF and TRAFFIC (p. 55).

A summary of research assertions on consumer demand for rhino horn is given in Table 4 to stimulate ideas for future research. In the next section, we provide a myriad of recommendations for subsequent analysis of demand reduction strategies.

5 | FUTURE RESEARCH ON CONSUMER DEMAND FOR RHINO HORN

5.1 | Assessing gateway behaviors

Researchers have called for a deeper understanding of gateway behaviors (e.g., triggers) to examine the scale of buying rhino horn

TABLE 4 Summary of research assertions on consumer demand for rhino horn

Motivational clusters	
Cultural (e.g., use for tradition)	Medicinal (e.g., use for wellness)
Emotional (e.g., fulfill hedonistic pleasure)	Recreational (e.g., use in leisure activity)
Financial (e.g., stockpile as an investment)	Reputational (e.g., gain "face" in business)
Functional (e.g., use every day)	Social (e.g., create image/ status symbol)
Nutritional (e.g., use for food)	Spiritual (e.g., brings good fortune)

Drivers of consumption	
Business gift	Masculinity
Brings power	Peace of mind
Cancer	Sexual potency
Cures from illness	Spiritual object
Detoxification	Peace of mind
Good health, well-being	Power
Hangover cure	Sexual potency
Investment	Social group acceptance
Luck and good fortune	Wealth status

Deterrents of consumption	
Extinction of rhinos	Penalty for violating laws
Killing of rhinos/cruelty to rhinos	Rhino horn deteriorates easily
Legality, personal risk	Rhino horn is not effective as a cure
Linkages to organized crime	Rhino horn is not worth the price
High risk of buying fake products	Shame in buying rhino products

Sociodemographic	
Education	Income
Marital status	Household composition
Occupation	Frequent travelers outside China/Vietnam

Purchase habits	
Amount purchased in the past	Habitual versus opportunistic consumption
Intentions to purchase	Influence of gateway behaviors/triggers
Planned versus unplanned purchases	

Influence of others	
Business colleagues	Friends
Family	Spiritual leader

TABLE 4 (Continued)

Motivational clusters	
Purchase occasions	
Gift	Cultivate a relationship
Birth of child	Promotion at work
Birthday	Wedding anniversary
Chinese New Year	Western New Year
Purchase channels	
Tourist travel overseas	Online
Business travel overseas	Wholesale shop
Private individual	Pharmacy
Retail store	Street vendors
Market stall	Zoos and safari parks
Substitute products	
Alternative animal products (e.g., buffalo horn)	Farmed versus wild products
	Synthetic product
Societal behavioral controls -- need to fix the spacing for this heading	
Align with key stakeholders (e.g., non-governmental organizations)	Implement stricter law enforcement
Recommend change in government policy	Create awareness of regulations/penalties
Behavior change communications	
Use influential messengers (e.g., celebrity endorsements, conservationists)	Generate awareness of the problem
	Shape motivation to deconsume

Source: Adapted from Broad and Burgess (2016); Burgess (2017); Burgess et al. (2018); Change Wildlife Consumers (2017); Globescan (2018); Thomas-Walters (2018); USAID Wildlife Asia (2018); and Truong et al. (2016).

and to evaluate the initial consumption experience (Burgess et al., 2018). For example, does a consumer's initial purchase of a small sample lead to greater demand for more rhino horns? Second, did the consumer try the rhino horn in an opportunistic way, such as being offered the product attending a party with friends? Vietnamese consumers with high levels of consumption of rhino horns had a strong conviction that it effectively treats hangovers and sexual enhancement, but "occasional users" were simply curious about the product—what triggers that type of demand? (Change Wildlife Consumers, 2017). Other research uncovered that most of the Chinese consumers made unplanned (42%) versus planned purchases (19%) of rhino horns and this finding supports earlier assumptions of opportunistic behavior (USAID Wildlife Asia, 2018). Headline goals have been identified in other areas of conservation, such as what motivators induce the ability and willingness to recycle products or conserve water (Hensen et al., 2016)? Department for Environmental

Food and Rural Affairs (2008) asserts that "common motivators to study include: 'feel good factor,' social norm; individual benefits (e.g., health; financial outlay); ease; being part of something" (p. 7). Thus, more research needs to be conducted to discern the influence gateway behaviors and headline goals have on the consumption of the rhino horn.

5.2 | Fostering demand for substitute products

Broad and Burgess (2016) provide a relevant discussion of moving demand for rhino horn to other animal products (e.g., buffalo horn); inventing synthetic products that mimic the wildlife product; and debate the perceived utility of farmed versus wild-caught products for consumers. Chinese consumers were willing to switch to substitute products for rhino horns, such as buffalo, cow, and antelope horns and synthetic products for decorative purposes only (USAID Wildlife Asia, 2018, p. 24). The controversy of allowing "farmed rhino horn" to be sold on a legal domestic exchange has been challenged in the South African courts. John Hume, the largest privately held owner of white rhino horn in South Africa, asserts that the legal trade of harvested rhino horn from captive breeding operations would result in significantly less poaching of "wild" rhinos and could potentially appease the demand of Asian consumers (Save the Rhino International, 2018).

5.3 | Evaluating the counterfeit market

Lessons can be drawn from current research that has established practices to demarket the consumption of other illicit goods, such as pirated movies (Chaudhry & Cesareo, 2017) and counterfeit pharmaceuticals (Chaudhry & Stumpf, 2013). Chaudhry and Zimmerman (2013) performed a content analysis of anticounterfeiting ad campaigns and found that the primary messages used role models (celebrity endorsements), peer pressure, education, fear (getting a virus from online video streaming), and plausible linkages to organized crime to discourage the use of counterfeits and pirated goods. Chaudhry and Cesareo (2017) tested these messages using consumers in Brazil, Russia, India, China, and the United States and found that certain communications, such as the linkages between pirated/counterfeit products to organized crime, were rated as effective ways to change consumption behaviors—even among consumers who frequently pirated movies online. However, this study also discovered that the perceived degree of effectiveness for each messaging tactic (e.g., fear, using a role model) varied by the national culture of the respondent. For example, generating an awareness (education) of the problem of illicit trade in anticounterfeiting messages was rated more influential by Brazilian, Chinese, and Indian consumers, but, not their US and Russian counterparts (Chaudhry & Cesareo, 2017).

Earlier studies have established that counterfeit rhino horn is a major deterrent for future consumption in both Vietnamese and Chinese consumers. Thus, research needs to address the extent of the fake rhino sold in both online and offline markets. The 2019 campaign that supplied fake rhino horn made of horsehair with the purpose of confusing consumers about the authenticity of the product represents another study to discern whether the price of the horn dropped due to decreased demand (Davis, 2019). In addition, future studies could also draw from the demarketing work established in other areas of illicit trade to establish more salient messaging tactics to employ to diminish rhino horn consumption.

5.4 | Employing benchmarks to campaigns

Robust research on the use of celebrities, a measure of fit, recall, and campaigns that will change behavior is another area to explore. Rhino horn is consumed for a variety of reasons that makes the development of targeted campaigns to demarket demand based on the key motivator, whether It is medicinal or spiritual, to be another plausible stream of research. Some of the key concerns of using social marketing to deter demand for illegal wildlife center on whether the messaging used in the campaign goes beyond developing an awareness of the problem and resonates with the consumer to change his/her behavior. In addition, did the campaign use some type of criteria, such as the UK's National Social Marketing Center benchmarks to design the campaign and gauge its success?

Greenfield and Verissimo (2019) interviewed seven organizations that had employed demand reduction campaigns for ivory and rhino horn in China and Vietnam and uncovered limited evidence of the use of benchmarks. Most of the campaigns used some type of "customer orientation" to develop a campaign for a targeted audience, but several campaigns were limited by both funding constraints and the ability to effectively survey the targeted consumers. Greenfield and Verissimo (2019) identified few campaigns that addressed "competition" to discern what other marketing messages compete for the time of the target audience and effective use of all the marketing mix to reach consumers. Most campaigns heavily used advertising through mass media to reach audiences in Vietnam and China. Again, more work is required here to measure the success or failure of campaigns targeted at frequent users of rhino horn.

6 | RESEARCH METHODS

A significant challenge for reducing demand for rhino horn centers on using analytical tools developed for "Western" consumer behavior to effectively change the actions of "Eastern" consumers (Chuang et al., 2015; Wong & Ahuvia, 1998). This problem represents another area of concern regarding the limited studies that have assessed demand for illegal wildlife products. The "behavior" of the consumer is mainly measured through their attitude, awareness, and intentions with little evidence that connects this knowledge to change their

consumption of wildlife—a behavior-impact gap problem (Csutora, 2012). Surveys support the reduction of consumer demand for rhino horn over time in Vietnam (Change Wildlife Consumers, 2017), but one could argue that this self-report data are biased by the respondents' proclivity to give socially desirable responses (Fisher, 1993, 2000; Fisher & Katz, 2000) that are influenced by the cultural dimensions of their country of origin (Middleton and Lynn-Jones, 2000). For example, did the organizations that develop these campaigns identify what type of consumer behavior theory to employ in the context of an "Eastern" mindset for the messaging strategy? Future empirical studies should incorporate the influence on culture, such as the previous research that used Geert Hofstede's concept of power distance to measure the credibility of celebrity endorsements in India (Winterich et al., 2018).

There are several methods to test the research problems suggested in our recommendations. Most research on consumer demand has primarily used either qualitative (e.g., focus groups) or quantitative surveys to depict consumption patterns. Another survey that reports descriptive statistics of Vietnamese and Chinese consumers is not going to deepen our understanding of the problem. We suggest developing a model of this type of behavior, hypotheses testing, and scale development to provide more robust statistical analyses of the Asian consumers' willingness to consume rhino horn. For example, creating scales to measure each motivational cluster (emotional; spiritual) would be novel research. Other methods, such as content analysis, could be used to categorize all the various themes that have been used in wildlife protection campaigns for rhinos to reveal trends and frequency of various messaging tactics for the past few years. Subsequent research could use experimental designs to test campaign themes with Asian consumers to support whether slogans that relate to the future extinction of rhinos are more salient than warning consumers about the counterfeit market to decrease their consumption of rhino horn? We would also recommend a study that uses an experimental design to text the celebrity-product degree of fit to distinguish which celebrities are credible spokespersons to protect the rhino and will have a greater impact on consumer demand. The researchers could evaluate the problem of "eclipsing" in these experiments to detect whether the advertisement is overly focused on the celebrity, not the rhino (Keel & Nataraajan, 2012).

7 | A CONCLUDING NOTE

This paper summarizes the previous survey work on rhino consumption and recommends new areas of research on demand reduction tactics for illegal wildlife. This topic is almost nonexistent in the academic literature and it is our responsibility to assist agencies, such as TRAFFIC and WWF, to help them preserve the future of many animals that are endangered. A variety of solutions are feasible, such as diverting demand to substitute products. Overall, the academic community has the expertize to discover and implement demand-reduction strategies that could really protect the rhino, elephant, pangolin, and tiger from future extinction.

DATA AVAILABILITY STATEMENT

Data sharing not applicable—no new data generated, or the article describes entirely theoretical research.

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