



Understanding utilitarian and hedonic values determining the demand for rhino horn in Vietnam

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ABSTRACT

We examined utilitarian and hedonic values as motivations for rhino horn use in Vietnam. We also evaluated consumers' response to consequences of the illegal trade in behavior modification campaigns and the likely outcome of a legalized trade. The most prevalent use was for treatment of hangovers indicating utilitarian values, although difficult to separate from the hedonic value in projecting success in business. A ritualized way of honoring terminally ill relatives represented a hedonic value replacing belief in effective treatment. Demand reduction campaigns need to appropriately reflect all relevant values determining specific uses. The plight of rhino populations, Vietnam's penal code, and the possible contribution to international crime mattered little to consumers. Horn from wild rhino was preferred over farmed, and respondents would demand more if available in a legalized trade. This suggested that a legalized trade could maintain or even increase demand for poached rhino horn.

KEYWORDS

Consumer behavior modification; illegal use; legalized trade; perceived value

Introduction

Illegal trade in wildlife and its derivatives poses a significant threat to biodiversity conservation, decimating populations, and driving species toward extinction (UNODC, 2016). Trade in wildlife products finances violent conflicts, contributes to destabilizing national security, and hinders local economic development in source countries (Douglas & Alie, 2014). The trade in rhino horn is among the most organized illegal activities (Ayling, 2013; Milliken, 2014). The number of rhinos killed by poachers has increased steeply since 2008 (Milliken, 2014; TRAFFIC, 2015). If this level of poaching continues unabated, there will likely be no rhinos left in the wild in 20 years (Di Minin et al., 2015). In Vietnam, the subspecies of the Javan rhino was declared extinct in 2011 with the last individual being poached in 2010 (Brook et al., 2014).

Demand for rhino horn is widespread and growing in Vietnam, particularly in the upper income brackets (Milliken & Shaw, 2012). A recent survey found that 28% of 444 men randomly selected from upper income groups in Hanoi and Ho Chi Minh City had used rhino horn—a third of these within the previous six months (Truong, Dang, & Hall,

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2016). Reducing demand through behavior modification campaigns requires that motivations for use and the values this good represent to consumers are understood (Verissimo, Challender, & Nijman, 2012).

Different motivations for consuming rhino horn have been suggested, and rhino horn consumers have been categorized according to use (Milliken & Shaw, 2012; TRAFFIC, 2013). Milliken and Shaw (2012) defined four user categories: (a) terminally or seriously ill patients hoping for a cure; (b) habitual users on the social circuit using it as detoxification for hangovers; (c) middle- and upper-income mothers, using rhino horn to treat children with high fever; and (d) elite gift givers, using rhino horn as an expensive gift to seek support from those in power. Rhino horn use has also been described in somewhat overlapping categories of providing physical, health-related, and emotional motivations (TRAFFIC, 2013). Motivations for using rhino horn derive from its perceived value, which is conceptualized as the benefit or utility that an individual receives for what he or she pays (Ryu, Han, & Jang, 2010).

The perceived value of a product is a multi-dimensional construct (Sweeney & Soutar, 2001) and considerable effort has been devoted to its conceptualization for different goods (Babin, Darden, & Griffin, 1994). Batra and Ahtola (1991) initially suggested two fundamental reasons for consumers to purchase goods and services: (a) instrumental, utilitarian reasons determined as the sum of satisfaction obtained and (b) consummatory affective hedonic gratification from sensory attributes. Sheth, Newman, and Gross (1991) further categorized social, emotional, functional, epistemic, and conditional values. The perceived value has also been viewed as having cognitive and emotional dimensions (Grönroos, 1997). The most popular dimensions in recent marketing literature, however, remain utilitarian and hedonic values (Babin et al., 1994; Hanzaee & Rezaeyeh, 2013; Jones, Reynolds, & Arnold, 2006). Marketing research defines utilitarian value as resulting from conscious pursuit of an intended consequence, which is task-oriented and rational (Hanzaee & Rezaeyeh, 2013). It is related to visible benefits of products and services proving instrumental in obtaining functional goals (e.g., drinking rhino horn powder to reduce high fever; Gursoy, Spangenberg, & Rutherford, 2006). Hedonic values, on the other hand, are the indirect, non-tangible benefits (Arnold & Reynolds, 2003), which derive from a product's unique, symbolic and status-conferring function, imagery, and emotional appeal (Hirschman & Holbrook, 1982). They are not related to any physical function of the product (Dhar & Wertenbroch, 2000). Hedonic values are more subjective and personal, exemplified by values such as freedom, self-expression, and entertainment values (e.g., the pride experienced from owning a rhino horn due to its rarity and preciousness; Babin et al., 1994).

Perceptions of utilitarian and hedonic value differ by subject, product, and over time (Yuksel, 2004). Which dimension of the perceived value is more important is debatable. Hedonic value is more important in some studies (Jones et al., 2006), while others find utilitarian values more important (Overby & Lee, 2006). Understanding the relationship between these perceived values and post-consumption responses (e.g., customer satisfaction) and behavioral intentions is considered vital in retail strategy (Hanzaee & Rezaeyeh, 2013). For instance, Hanzaee and Rezaeyeh (2013) found that customer satisfaction was influenced more by hedonic than utilitarian value, whereas behavioral intentions toward a good, which could be defined as the degree to which a person has formulated conscious plans to perform or not perform some specified future behavior, was influenced more by

utilitarian than hedonic value. Recent studies have evaluated the importance of utilitarian versus hedonic values in tourist shopping (Albayrak, Caber, & Çömen, 2016), airport shopping behavior (Chung, 2015), and retail services (Bradley & LaFleur, 2016). However, little research has focused on the perceived value of wildlife products such as rhino horn.

We used consumer theory to differentiate utilitarian and hedonic values as motivations for rhino horn use in Vietnam. Examining these motivations will facilitate consumer behavior modification campaigns. We then evaluated the extent to which these values are reflected in current campaigns and the influence of: (a) information about the conservation status of rhinoceros' populations, (b) information on the illegality of use and trade of rhino horn in accordance with the penal code of Vietnam, and (c) the relation between the rhino horn trade and organized international criminal networks on the demand for wildlife products in such campaigns. Finally, we investigated preferences for wild versus farmed rhino horn and the likely impact of a legalized trade on curbing current poaching pressure.

Methods

Due to the illegal nature of rhino horn trade in the Vietnamese penal code, this article is based on a small sample of qualitative interviews with confessed rhino horn users in Hanoi and Ho Chi Minh City in 2015 and 2016. The word "use" refers to consumption and non-consumptive purposes (e.g., adornment, gifting). Interviewees willing to talk about rhino horn use were randomly selected among available contacts from a previous study (see Truong et al., 2016). The sample was subsequently expanded using a Snowball sampling strategy. Interviews were held in the interviewees' home or office and conducted by the first author and an assistant.

The interviews were not tape recorded due to the sensitivity of the subject in Vietnam. Instead, detailed answers were reconstructed based on notes and recollection. Interviews typically took less than 20 min. Comparison of the reconstructed interviews from the two interviewers yielded almost identical responses. Questions focused on the motivations for using rhino horn and the values attached to this good. Topics included primary use of rhino horn (circumstances and the reason for use), how it was used (e.g., in what form), how the horn was obtained, and experience with its use including about attaining the desired effect. Respondents were asked to reflect on the current conservation status of rhinoceros, the illegality of consuming, owning and trading rhino horn under Vietnamese law, and the relation between rhino horn trade and international criminal networks. Specifically, interviewees were asked how knowledge would affect their demand for rhino horn if they were informed by a source credible to them that: (a) the remaining rhinoceros populations were critically endangered; (b) the trade and use of rhino horn was illegal under Vietnamese law; (c) the trade in rhino horn is managed by organized criminal networks, and (d) the profit of this trade was financing international terrorism (regardless of whether or not these points are in fact true). Finally, interviewees were asked whether they preferred wild or farmed rhino horn, how much they would be willing to pay (for legal vs. illegal horn), and whether they would likely purchase more or less rhino horn if a legally sanctioned trade was established.

Analysis involved content analysis of the data based on a priori defined themes in the questions. Statements reflecting values and motivations for rhino horn use were coded based on the definitions of utilitarian and hedonic values above.

Results

Sample characteristics

In total, 30 interviews were conducted. Due to the sensitivity of purchasing, owning, and consuming an illegal product and the increasing attention from the Vietnamese government, interviews could not always be conducted in accordance with interview guidelines. Sixteen interviews followed the guidelines and were considered “Complete” (C). Five interviews were considered “Incomplete” (I). The final 10 interviewees were unwilling to be interviewed in the traditional sense but were willing to talk about their use of rhino horn in “Narrative” form (N). These labels were combined with the interview number as an ID. All interviewees were confessed recent consumers of rhino horn. Respondents were mainly men (one woman), middle-aged and in senior positions in various business corporations and government administration. One respondent traded rhino horn and other valuable wildlife products and had done so the past 10 years working with a friend living in South Africa.

Utilitarian use

Various reasons and values were mentioned for using rhino horn. The most frequent use was for detoxification, treating hangovers after drinking binges (33%, $n = 27$). For example, “I used to drink a lot of alcohol as I needed to work directly with business leaders and high-ranking government officials. A couple of years ago, I started having hangover from drinking binges many times per week. Then, I was given a piece of rhino horn. I drank the liquid [after grinding the horn] early morning the next day. I felt very cool and much better and was able to have another party and drink alcohol with guests and partners in the afternoon” (interview I1).

The second most mentioned reason was the treatment of minor ailments ranging from backache, acne and blisters, gout, menstrual cramps, and fever convulsions, to kidney problems (30%, $n = 27$). Treating severe and potential terminal conditions was also mentioned including multiple sclerosis, bladder, stomach and medullary cancer, and hemiplegia (22%, $n = 27$). When combined, the treatment of various medical conditions (not considering hangovers) was the most commonly mentioned use of rhino horn (52%, $n = 27$).

Beliefs in effectiveness

Several respondents mentioned doubts about the effectiveness of rhino horn in treating their condition. One respondent, for instance, noted, “I drank rhino horn powder daily to support my kidney treatment. However, it didn’t seem to be effective. I felt ashamed when mass media kept delivering information about rhinos. I felt as if I was cheated” (interview C5). Others also appeared reluctant to mention that they were using rhino horn due to lack of effects but continued the use anyway. A man diagnosed with bladder cancer stated, “I don’t tell this to others [that he is using it] as it has not been effective. But I must try all kinds of treatment to save my life” (interview C8). Several respondents referred to other users’ experience, for example: “Rhino horn is useless in cancer treatment and for

enhancing men's sexual prowess. Ten years ago, his father [talking about his friend] got cancer. He ground rhino horn powder for his father to drink three times per day a period of more than two months. However, his father still passed away. Rhino horn did not help at all" (interview I2). Terminally ill patients had experienced pressure from the family to use rhino horn despite the lack of an effect as revealed by the statement, "it is just a waste of money. I told my mother that I didn't need it but she still bought it ... When I shouted about this, my mother cried. Thus, I drank it to make my mother happy" (interview C15). Others supported this sentiment indicating a ritualized use stating, "its use is based on psychological beliefs, rumors and its preciousness. It cannot treat other diseases [than hangover ...]. I know that, in some circumstances, people bring a piece of the horn to their relatives or friends with a sick family member. Then, they grind the horn for the sick person to drink. They just want to express their whole-hearted concern and help the patient find peace of mind" (interview N2). Even the rhino horn trader acknowledged that there was no scientific evidence for the alleged effect of rhino horn in the treatment of cancer stating, "In cancer treatment, it is only based on rumours. There is no scientific evidence. I told my clients about that and I did not promise that rhino horn would be an effective treatment for cancer" (interview N4). However, the trader was adamant that it was very effective in treating hangovers, although more than half (57%, $n = 7$) of the respondents using rhino horn for treating hangovers doubted or stated not having experienced the desired effect. More than half (57%, $n = 7$) of the people using rhino horn to treat minor illnesses and everyone using rhino horn to treat serious diseases ($n = 6$) did not experience any effect or acknowledged that other aspects might be responsible for any changes observed (for minor illnesses only). Several respondents expressed feelings of shame due to the missing effect but also pressure to use rhino horn. One respondent directly feared for his life after having been pressured to use rhino horn referring to the anti-poaching measure involving injecting dyes and poisonous substances into the horns stating, "We drank the mixture of rhino horn powder and water after the lunch party. I felt uncomfortable and nauseous I was afraid that I could be poisoned. I don't want to try it again" (interview C13).

Hedonic purposes

Few respondents stated exclusively hedonic motivations for using and desiring rhino horn. However, respondents across all the mentioned categories of utilitarian use explicitly referred to pride or joy experienced by using, possessing and, in several cases, also sharing rhino horn due to its rarity and preciousness (35%, $n = 27$). Hedonic values centred on the status-conferring function of rhino horn by showing wealth through conspicuous consumption and appearance. As stated by one interviewee, "Wealthy people just display it at home to show off. It shows their class, their socio-economic status, and help them obtain respect from others" (interview N8). Other uses balance between hedonic and utilitarian uses. These include gifting of whole rhino horns as well as serving rhino horn powder to those in power (i.e. high-ranking government officials) to obtain business favors and strengthening business networks. Obtaining favors from those in power and increasing business relations through gifting were fairly common (11%, $n = 27$) motivations: "Rich persons and high-ranking government officers in the region keep hunting trophies in their houses as status-conferring items for decoration. Most of those are gifted from others to

strengthen business relations or to seek favour and support from those in power. This is the major purpose of buying endangered species. These products are highly appreciated due to their high value and preciousness rather than their health-related benefits.” (interview I5). The gifting of rhino horn appears particularly tied to functions involving high-ranking government leaders: “In Viet Nam, wild meat is very popular in serving high-ranking government officials. Wild meat and rhino horn are used to strengthen relations or to seek favor and support from those in power. I believe that most rhino horn consumers in Viet Nam are high-ranking government officials. Business leaders also use rhino horn, but they mostly use it as a gift to government officials” (interview I4).

Rhino horn was also used for spiritual reasons including worship, self-protection and for good luck (7%, $n = 27$) and for ritualistic purposes including peace of mind for terminally ill patients and their caregivers. As explained by one interviewee, “It could be considered a psychological remedy. If you were me, you would understand. I had to witness my wife dying without any hope. Then I heard about the potential effect of rhino horn offering hope. So I got it for her so that at least I could feel that I tried my best. My wife felt better as she knew that I bought that for her and she was taking the most effective solution. So I did not regret when she died as I had done my best for her” (interview N9).

Conservation status of rhinos

Only one respondent expressed clear concern about the conservation status of rhinoceros. Another acknowledged that rhinos are recently extinct in Vietnam but thought that there were still many in Africa. Almost half of the respondents (46%, $n = 16$) explicitly expressed no interest or concern about the plight of rhinos. For instance, one respondent using rhino horn to reduce hangovers stated, “I will buy rhino horn if I need it and I have the money” (interview C1). Respondents using it for spiritual purposes expressed similar sentiments. Seven respondents (44%, $n = 16$) stated that they had no other option or had to try all options because of their or their dependents serious illness. One of these renounced the “need” to know about the plight of rhino populations. A respondent using it to treat a family member’s minor condition stated planning to continue using it because it was more effective than modern medicine. In total, 21 respondents indicated that they would not use rhino horn again.

National law and international crime

Only two respondents claimed not to know that trade and possession of rhino horn is illegal in Vietnam while one stated that it was not a focus of the police at the time when he was using it. Another two maintained that they either did not have any alternative or that this was the most effective treatment for their condition. However, 9 people (69%, $n = 13$) simply did not think that the police would pay attention and that law enforcement efforts were directed exclusively toward trade in large quantities. One respondent said “No one has been caught by the police for using rhino horn” (interview C1). The trader, on the other hand, stated, “I would rather lose all the goods than be caught by the police although it is very profitable” (interview N4). Only one claimed not to have heard about the relation between the rhino horn trade and organized crime. Seven knew but prioritized their own or relative’s wellbeing. One respondent treating his daughter suffering from multiple

sclerosis said, “To say it frankly - I don’t care” (interview C1). Another respondent stated, “I buy rhino horn because of my niece. Treating her is more important than anything else” (interview C11).

A legalized trade in rhino horn

Most respondents (73%, $n = 16$) preferred horn from wild rhinoceros over farmed animals due to their perceived higher potency. Some were willing to pay substantially more for the wild horn. One respondent treating her husband’s gout stated, “I am willing to pay more for the wild ones, even double. Even though there was a legal trade [in farmed] rhino horn, I would only buy the wild ones” (interview I6). However, two respondents acknowledged that they would buy farmed rhino horn if this was cheaper. Another respondent would buy the legal farmed horns if these were available despite preferring the wild ones. The 4 respondents (27%, $n = 16$) that preferred farmed horns thought they would likely be cheaper and just as effective and mentioned conservation concerns and fear of being poisoned (referring to the practice of injecting poison into the horns of rhinos as a conservation measure). Finally, 9 respondents (58%, $n = 16$) reflecting on this question would buy more rhino horn (in general) if there was a legal trade. Another 4 (25%, $n = 16$) would buy more only if needed and if sure that it was effective. Reasons given for not buying more included that the ailment was almost cured and lack of funds.

Discussion

Utilitarian value

Utilitarian values were the most prevalent single explanation given for rhino horn use. These are linked to alleged physical, health-related benefits (TRAFFIC, 2013) associated with the use of rhino horn in traditional medicine (Milliken & Shaw, 2012). Despite lack of evidence supporting any medicinal components (Gratwicke et al., 2008a), rhino horn is considered effective in reducing hangovers, high fever, convulsions, and essential in treating life-threatening diseases (Milliken & Shaw, 2012; TRAFFIC, 2013). The belief that rhino horn can cure cancer is recent, as is the increasing use as a detoxifier against hangovers (Milliken & Shaw, 2012). Reducing hangovers after drinking binges was the single most prevalent use in our sample; similar to a survey of high-income men in Hanoi and Ho Chi Minh City (Truong et al., 2016).

However, the most prevalent combined category of rhino horn use was for treatment of diseases and life-threatening medical conditions (e.g., cancer). Current demand reduction campaigns are targeted toward the use of rhino horn in cancer treatment and enhancing sexual prowess. The response of several interviewees, however, indicated that beliefs of such effects are fading, with most respondents acknowledging lack of any effect. This was particularly clear in relation to life-threatening conditions where respondents had experienced relatives and acquaintances passing away despite the use of rhino horn. The fact that these events occurred up to 10 years ago, and relate to the fate of others suggests that the values are changing. Instead of treatment for cancer, family members are using rhino horn for a ritualistic purpose. There have been reports of traders selling rhino horn to

terminally ill patients and their relatives (Milliken & Shaw, 2012). Even the trader in our sample, however, acknowledged the lack of any effect of rhino horn in treating cancer and claimed to inform customers. Evidence for changing beliefs in the effect of rhino horn in the treatment of minor illnesses is less clear, likely because the final outcome is less obvious (i.e., people do not die from lack of effect) particularly when combined with treatment with western medicine that might have an effect. None of the respondents mentioned enhancing sexual prowess as a motivation. Hence, this use is probably not a value currently perceived relevant (Ammann, 2011) although we cannot exclude the possible effect of a stigma inhibiting respondents from disclosing use for this purpose.

Hedonic value

Respondents across all categories of use mentioned hedonic values associated with their use of rhino horn. Previous research has shown that rhino horn users in Vietnam are motivated by hedonic values such as the status-conferring function of rhino horn (Ayling, 2013; Drury, 2011; TRAFFIC, 2013). The status-conferring function was an important hedonic value reflected in our findings as well. Rhino horn has long been regarded as a status symbol in Asian culture (Ayling, 2013). Drury (2009, 2011) showed that wildlife products (e.g., wild meat, rhino horn powder), were symbols of status and wealth. Pride or joy experienced due to the rarity and preciousness of rhino horn was also mentioned across all categories of users in our sample. Rhino horn is more valuable per unit weight than gold. The retail price of rhino horns has increased from about \$4,700 USD per kilogram in 1993 to about \$65,000 USD per kilogram in 2012 (Biggs, Courchamp, Martin, & Possingham, 2013). Rhino horn is among the most fashionable and luxurious wildlife products, particularly in Hanoi, where projected image plays a critical role in social success (Drury, 2011). Reducing demand for rhino horn is complicated by strong peer desire and pressure to increase social status by showing wealth through conspicuous consumption and appearance in Vietnamese society (Drury, 2011; TRAFFIC, 2013). According to Ammann (2011), rhino horn is regarded as “a status symbol like a Ferrari or a diamond ring.”

Rhino horn is also used as a status gift and speculative asset for Government officials, dignitaries, and senior executives in Vietnam based on its hedonic value (t Sas-Rolfes, 2012). The gifting of rhino horn particularly to high-ranking government leaders was evident even in our small sample. Rhino horn is regarded as “an ideal present or bribe for big bosses who need to overcome symptoms of excessive consumption” (Ammann, 2011). Gifts help establish and maintain social ties and play a major role in interdependent cultures (Belk & Coon, 1993). An extremely rare and expensive gift like a rhino horn symbolically encodes esteem for the gift recipient and brings honor to the gift giver (Ahuvia & Wong, 1998).

Understanding of motivations of rhino horn users requires insight in Asian culture; users are not only being driven to show social status but are also influenced by normative beliefs, which are beliefs about expectations of significant “referents” (e.g., family members, friends, peers or partners) (Ajzen, 1988). In Vietnam, there is strong social peer pressure to comply with norms and expectations of members of the same wealth groups (Ahuvia & Wong, 1998). People are highly status-conscious, particularly in Hanoi. Hosts

of social events strive to meet expected standards by serving rare and expensive foods. These informal events are regarded as convenient ways to develop economic and political networks to gain advantage and favor from those in power. In central Hanoian society, wild meat is a prestigious food that plays an important role in social discourse, used to conspicuously reify differences in wealth and social status, and demonstrate respect and business competence (Drury, 2011). Drury (2009) showed that people under pressure to conform to group identity will eat wild meat and drink rhino horn powder, even though they did not want to. We found similar evidence of users feeling forced to drink alcohol, and use rhino horn powder despite fear of the practice of poisoning rhino horns as an anti-poaching measure (Ferreira, Hofmeyr, Pienaar, & Cooper, 2014). Ayling (2013) identified the existence of social norms, including in the use of wildlife in traditional medicine, that conflict with legal regulations. As we also found, use of rhino horn attracts no stigma and is often seen as normative and socially acceptable behaviour despite the illegal nature of the trade (Milliken & Shaw, 2012; Truong et al., 2016). The use by high-ranking government leaders appears to endorse this behavior. In Southeast Asian cultures, an individual's identity is embedded in familial, cultural, professional, and social connections (Ahuvia & Wong, 1998). Especially in Confucian societies, people are expected to live up to standards of their peers to preserve "face," which is an important determinant of luxury consumption. In general, people are more inclined to conform to group identity and social norms. There are five aspects of Confucian collectivism relevant to rhino horn consumption: (a) interdependent self-concepts, (b) balance between individual and group needs, (c) hierarchy, (d) legitimacy of group affiliations, and (e) humility. The interdependent self-concept leads to a tendency to judge individuals based on their group identities. In a collectivist culture like the Vietnamese, consumers are motivated to comply with their peers. Culture makes it difficult to refuse when offered a drink of rhino horn powder, despite concerns about being poisoned and may explain the embarrassment of admitting that rhino horn did not have the desired effect (both observed in our sample). A person does not drink rhino horn powder as an individual but represents the whole group. Even though one participant considered refusing, he must think about how his behavior reflects on other members of his group (Ahuvia & Wong, 1998). These are important insights that need to be considered in the design of consumer behavioral modification campaigns.

Finally, some respondents used rhino horn for spiritual purposes including worship, self-protection and good luck. A survey by TRAFFIC (2013) revealed that people kept a piece of rhino horn at home to give them "peace of mind"—a hedonic value. This group included middle- and high-income mothers who desired to have rhino horn powder around enabling them to treat high fever of their children (a utilitarian value). Rhino horn is also used as the last resource to treat fatal diseases. Although rhino horn is not recognized as an effective treatment in these cases (Ammann, 2011), family members gave patients rhino horn powder mixed with water to drink (Milliken & Shaw, 2012). This behavior in our sample was mostly driven by the hedonic values of rhino horn. Relatives wanted to show that they had done their best for their terminally ill loved ones. The desperation of these patients and their relatives contribute to the inelasticity of the demand for rhino horn, implying that buyers are relatively insensitive to price increases ('t Sas-Rolfes, 2012) complicating the design of effective consumer behavioral modification campaigns.

Demand reduction campaigns

Understanding the perceived value of rhino horn in Vietnam is pivotal to developing appropriate strategies to reduce demand. Similarly, it is important for the design of behavior modification campaigns to evaluate whether conservation concerns, national legislation and information about the connection between the illegal trade in rhino horn and organized criminal networks have any influences on the intention to use and purchase rhino horn.

There was little concern for the conservation of rhinoceros' populations. Most respondents simply did not care for what appears to be principal reasons, and considered the fate of rhinos outside their influence. Others prioritized the utilitarian value to own health and their dependents health or hedonic values in relation to the ritualized use for terminally ill dependents. A survey showing pictures of dead dehorned rhinos to respondents elicited responses such as, "These [pictures] look quite frightening, but actually it is something far from us, and it is not my responsibility," and, "Oh, it is normal. It is natural selection as Darwin's theory. Human is a kind of animal, and we are stronger than rhinos" (PSI/Vietnam, 2014). Similarly, we found little concern about the illegality of use, trade in rhino horn, or its contribution to financing organized crime. In Vietnam, illegal trade in rhino horn is punishable by sentences of up to 15 years' imprisonment and a fine of up to 2 billion Dong, equivalent to approximately \$87,000 USD. Offenders may be banned from holding certain positions for one to five years (Milliken & Shaw, 2012). However, despite a relatively high number of rhino horn traders being arrested, no one has so far been convicted for purchasing or consuming rhino horn in Vietnam. Law enforcement in relation to wildlife crime remains under-prioritized particular in Vietnam (Nowell, 2012). People generally consider purchasing, owning and consuming rhino horn a legal grey zone with limited or no police attention and consequence (Huang, 2013). Like the conservation status of rhinos, the contribution to organized crime was considered outside their scope of influence or irrelevant compared to their own or dependent's health condition. This suggests that awareness-raising campaigns focusing on the status of rhino populations and the illegality of the trade may influence only the most marginal consumers, but is unlikely to affect buyers, who are willing to pay a large amount of money to acquire rhino horn (t Sas-Rolfes, 2012).

Although regarded as an illicit product in the "black market" (Conrad, 2012; Milliken & Shaw, 2012), demand for rhino horn is clearly driven by utilitarian and hedonic values. It is difficult, however, to separate one value entirely from another (Ahuvia & Wong, 1998) and in many respects, users are driven by both utilitarian and hedonic values. For instance, some users believe in the effectiveness of rhino horn powder in treating hangovers and body detoxification, which represents a clear utilitarian value. However, when one hosts a party for business collaborates and shares this powder to reduce hangover, this is mainly a way to show wealth and to confer social status, which is a hedonic value. Gifting rhino horn to strengthen business relations and to obtain favours from those in power is motivated by both utilitarian values and hedonic values of rhino horn.

The failure to determine the specific values that rhino horn provides in each type of use undermines behavioral modification campaigns to reduce demand. Many campaign efforts are focused on the utilitarian value of rhino horn to dissuade use in traditional medicine

for terminal illnesses. Many users, however, are no longer driven by this value belief, having experienced no effect themselves or others misery. Specifically, the belief that rhino horn is a cure for cancer appears to be declining simply based on experience. Rhino horn is now used as a symbolic gesture to consolidate terminally ill relatives by showing that they have done everything possible and to provide them with some final joy (i.e., a hedonic value to both the giver and the receiver). Several campaigns also focus on the use of rhino horn to confer social status thanks to its hedonic values but fail to address its utilitarian values (i.e., obtaining political favors), which combined make up the total value sought after by users. Targeting only one of two values driving a particular use reduces the effect of the campaign and addressing the values separately may prove difficult in practice.

For example, the Chi Initiative launched in 2014 in major Vietnamese towns, developed four social marketing messages to address different purposes of rhino horn use: (a) masculinity comes from within—“A man’s allure and charisma come from within, not from a piece of horn,” (b) character comes from within— “A successful businessman relies on his will and strength of mind. Success comes from the opportunities you create, not from a piece of horn,” (c) be aware—“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,” and (d) spirituality comes from within—“Good luck comes in many forms. Health, success, respect. The lucky man knows that the tallest towers rise from the ground, not from a piece of horn” (TRAFFIC, 2017). The first message addresses the use of rhino horn to enhance sexual prowess among Vietnamese men. However, as we show above this is not currently a prevalent utilitarian value of rhino horn consumption (Ammann, 2011; Truong et al., 2016). The second message dissuades gifting rhino horn in business mainly targeting its utilitarian value. However, a rhino horn gift is appreciated by the recipient because of its utilitarian value as a perceived effective treatment reducing hangovers and detoxifying the body, and for its hedonic value as a precious and valuable product. The gift also confers hedonic value to the giver for the status it bestows, and utilitarian value for the favor it buys from business relations or government officials (Truong et al., 2016). The third message addresses specifically a utilitarian value of rhino horn by stating that wise men use natural means to detoxify their bodies referring to after excessive alcohol consumption. However, the effectiveness of rhino horn for this purpose is widely recognized in Vietnamese culture (Ammann, 2011; Truong et al., 2016) and perhaps focusing on changing lifestyle and disproving its effect would be more relevant. The last message is largely unclear and seems unlikely to target appropriately the minority currently using rhino horn for spiritual purposes. However, we are not able to evaluate the actual effect of the campaign. Nevertheless, we suggest that future campaigns more clearly target the current combined values of users as well as receivers including where both utilitarian and hedonic values are drivers.

A legalized trade in rhino horn

Strategies to reduce rhino poaching pressure are debated in the conservation community and academia and particularly the question whether continuing the ban on rhino horn trade and strengthening enforcement or allowing a legal market for rhino horn will be most effective in addressing the current poaching crisis. Proponents of a regulated trade, based on farmed animals, argue that the trade ban is failing because it is based on an inadequate understanding of demand and the powerful market forces in consumer

countries that overwhelm enforcement efforts (Biggs et al., 2013; Velasquez Gomar & Stringer, 2011; Verissimo et al., 2012). Enforcement, it is argued, does not reduce demand that is price-inelastic and growing in status-conscious markets in East Asia (Velasquez Gomar & Stringer, 2011). Instead the price has gone up because of the unsaturated demand driving the trade underground and into criminal networks, which by controlling the market can stockpile in anticipation of future price rises in effect banking on extinction (Mason, Bulte, & Horan, 2012). Proponents expect, based on traditional economic theory, that a legal trade of farmed rhino horn will flood the market lowering the price and hence drive poachers out of business (Biggs et al., 2013; Moyle, 2013). Those objecting to this trade suggest that this trade might awaken demand in other markets by removing the stigma associated with these products (Ayling, 2013; Milliken & Shaw, 2012), which is worrisome because rhino horn has no substitutes and might be considered to have religious or medicinal properties (Prins & Okita-Ouma, 2013). Consumers of traditional medicinal products often prefer wild over farmed products because they are perceived to be more potent (Gratwicke et al., 2008b). Farmed and wild rhino horns are not pure substitutes (Kirkpatrick & Emerton, 2009). This belief may lead to price differentials with a premium for illegal wild products, creating profit margins that may spur poaching even after the introduction of farmed supplies (Drury, 2009; Gratwicke et al., 2008b; Kirkpatrick & Emerton, 2009). The reality is probably more complex than reproduced here, characterized by imperfect competition arising from shifting consumer preferences, laundering and the response of criminal supplier networks (Damania & Bulte, 2007; Prins & Okita-Ouma, 2013) and the possibility of anthropogenic Allee (Courchamp et al., 2006) and snob effects (increased liking as a function of rarity) weakening the effect of supply-side antipoaching efforts (Chen, 2016). The arguments of the proponents of the trade have furthermore been severely criticized as relying on simplistic and extremely restrictive assumptions and theoretically discredited approaches (Nadal & Aguayo, 2014).

Our results support the notion that consumers prefer horn from wild ranging rhinos to farmed individuals. Respondents stated they were willing to pay twice as much for horns from wild rhinos due to its perceived higher potency. Previous surveys have also found that wild products are preferred over farmed animals and that those who can afford it will pay a premium for wild products (Drury, 2009; Gratwicke et al., 2008b). Hanley, Sheremet, Bozzola, and MacMillan (2017) used choice experiments and found that Vietnamese consumers were willing to pay more for horns from wild rhinos. However, consumers also preferred horns harvested humanely from living animals and willingness to pay among both existing and potential consumers was reduced with a legalized trade. Hanley et al. (2017) conclude that legalization could potentially crowd out illegal horns. However, respondents may take into consideration that there are likely substantial differences in production costs in favor of poaching offering substantial economic incentives for poachers and smugglers to undercut farmers in any regulated trade (Gratwicke et al., 2008b). Our results indicate a general disregard for the fate of individual rhinos and rhinoceros' conservation in general compared to individual motivations for using rhino horn. We found that demand for rhino horn is likely to increase with a legalized trade as more than half of the respondents would purchase more rhino horn if it were available. Given the apparent disregard for the conservation status of rhino populations, Vietnamese rule of law and the involvement of organized crime, this preference would increase demand for poached rhino horn despite a legal trade. These results also suggest that any attempt to legalize trade in rhino horn would increase demand, including

for poached rhino horn, and would require that sufficient funds are concomitantly used to improve enforcement and reduce incentives for poaching through local development in supplier regions (Di Minin et al., 2015).

Conclusion

Understanding the different values of rhino horn plays a pivotal role in developing appropriate strategies to reduce demand for this good (Challender & MacMillan, 2014; Verissimo et al., 2012). We highlighted the importance of two values—utilitarian and hedonic—and documented how beliefs in the effect of rhino horn and reasons for use are changing from utilitarian to hedonic values relative to treatment for life-threatening illnesses. There is a need to determine empirically and track the utility of rhino horn consumption relative to these values so that consumer behavior modification campaigns are targeted appropriately. Some campaigns to reduce demand in this respect appear ill-conceived, and others have proved to be ineffective due to lack of insights into the Asian and Vietnamese cultural context (t Sas-Rolfes, 2012; Challender & MacMillan, 2014; Verissimo et al., 2012). Appealing to consumer's conscience may have limited influence on the intention to buy and use this good. This includes through providing information on the conservation status of rhino populations, the illegality of trade and use in accordance with Vietnamese national law, and reference to how the illegal trade in rhino horn may be fueling violence, financing organized criminal networks and international terrorism. Campaign designs need to consider psychosocial core latent needs that give rise to a desire for rhino horn, explore the underlying conflicts and dilemmas and determine how desire can be most efficiently redirected (Lertzman & Baragona, 2016). Consumers are willing to pay more for wild (i.e., poached horns) over farmed rhino horn even with a legalized trade - a widely debated management strategy to reduce poaching. The increased availability of rhino horn would also increase the amount demanded. Answering the inherent questions posed by proponents and those objecting to the feasibility of a regulated trade as a means to stop the current rhino-poaching crisis require more knowledge about the perceived values and preferences and how they respond to price trends and policies (Nadal & Aguayo, 2014). However, given the apparent disregard for the conservation status of rhino populations, Vietnamese rule of law and the involvement of organized crime, legalizing trade would maintain or even increase demand for poached rhino horn.

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