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Your happiness or mine: Influence of affective states and level of contact on public perceptions of elephant tourism

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Abstract

*Many captive Asian elephants (*Elephas maximus*) in Thailand participate in the tourism industry at attractions known as 'elephant camps.' There has been significant criticism of low welfare venues, where the elephants may experience injuries, poor nutrition, unnatural social environments and aversive handling. Despite increasing concern for animal welfare, the general public often have difficulty identifying the welfare issues affecting captive animals. The aim of this study was to investigate participants' willingness to support an elephant attraction and their perceived emotional value from the experience, based on the affective state of the captive elephant and their level of contact with it. Participants (n = 590) from the United States were randomly assigned to one of four vignettes (using a 2 × 2 experimental design) that described an elephant attraction, varying the affective state of the elephant (feels excellent, feels terrible) and the level of contact they could have with the elephant (low, high). A mixed methods approach was used, where participants provided answers to Likert-type questions, followed by an open-ended response. Participants showed greater willingness to support the elephant attraction and greater perceived emotional value from the experience when the elephant felt excellent, as opposed to when the elephant felt terrible. There were no significant differences between low and high contact for the measures included in this study. Qualitative responses varied greatly, with participants making many assumptions about the elephant and the attraction, revealing potential misconceptions that they had regarding the welfare of captive elephants. This research may be used to encourage a shift in tourism preferences to venues that reflect positive elephant welfare.*

Keywords: *affective states, animal welfare, contact, elephant, public perception, wildlife tourism*

Introduction

Thailand attracted over 35 million international tourists in 2017, more than doubling its tourism numbers since 2010 (World Tourism Organisation 2018). Many local venues exhibit wild-caught or captive-bred wild animals, the most common being Asian elephants (*Elephas maximus*), macaques (*Macaca nemestrina*) and tigers (*Panthera tigris*) (Schmidt-Burbach *et al* 2015). These attractions are based on a tourism niche called 'wildlife tourism', which involves interactions and viewing of wild animals in a range of settings, from their natural habitats to contained areas completely constructed by humans (Kontogeorgopoulos 2009a; de Lima & Green 2017). In 2018, the total contribution of wildlife tourism to global economies was estimated at $US343.6 billion (World Travel & Tourism Council 2019).

Wildlife tourism activities often involve touching, feeding and holding of wild animals (Belicia & Islam 2018). Numerous studies indicate that tactile contact and other human-animal interactions have the potential to improve mental and physical human health, for example, through pet ownership (Baun *et al* 1984; Beetz *et al* 2012). Additionally, many tourists experience feelings of wonderment and well-being when seeing wildlife up close (Curtin 2009). The demand for interactions with wildlife is likely to gain traction, given the popularity of posting photographs and videos on social media platforms, where wild animals are often used as 'photo props' (World Animal Protection 2017; Belicia & Islam 2018; van der Meer *et al* 2019).

Close proximity to wild animals is often linked to visitor satisfaction in wildlife tourism experiences. For example, a study by Schänzel and McIntosh (2000) found that satisfaction in penguin viewing equated to 'the closer the better.' This may be because proximity excites tourists by allowing for better viewing ability and increased intimacy (Curtin 2010). However, several studies indicate that desired proximity can be influenced by a variety of factors, including ethical concerns about the negative impact on wildlife (Orams 2000; Finkler & Higham 2004; Bach & Burton 2017; Verbos *et al* 2018).

Scientists often describe animal welfare in terms of three overlapping components: basic health and functioning;

natural living; and affective states (Fraser *et al* 1997), with some going so far as to say that the only construct that matters is the animal's emotional state (Duncan 2004, 2005; Fraser 2008). Furthermore, there are some studies indicating that the lay public may be willing to permit certain practices (eg animal production) as long as they are assured of the happiness of the involved animals (Cole 2011; Pettersson *et al* 2016).

As suggested by Lawrence *et al* (2019), there is an advantage to researching positive emotions in animals, as 'happy animals' are a subject that the general public finds engaging (Nelson & Fijn 2013). They noted that a study by Baciadonna *et al* (2019), which demonstrated that goats (*Capra hircus*) were able to distinguish between positively and negatively valenced calls, was 'tweeted' 118 times and mentioned in news stories 128 times (Altmetric 2019). Similarly, affective states may be an effective way to communicate welfare issues in the context of wildlife tourism. The connection that people feel with animals and their concerns regarding affective states may be an important factor in tourists' decisions to participate in activities with wildlife; however, to our knowledge, this has not been explored.

Over recent years, significant concerns have arisen regarding the welfare of elephants working in tourism venues, also known as 'elephant camps' (Bansiddhi *et al* 2020b; Schmidt-Burbach 2020). These include injuries (Kontogeorgopoulos 2009b; Magda *et al* 2015; Bansiddhi *et al* 2019), poor nutrition (Godfrey & Kongmuang 2009; Kontogeorgopoulos 2009b; Schmidt-Burbach *et al* 2015; Bansiddhi *et al* 2019; Norkaew *et al* 2019), housing (Schmidt-Burbach *et al* 2015; Bansiddhi *et al* 2019), unnatural social environments (Kontogeorgopoulos 2009b; Schmidt-Burbach *et al* 2015) and harsh training (Kontogeorgopoulos 2009b; Duffy & Moore 2011; Schmidt-Burbach 2020). Schmidt-Burbach (2020) investigated 246 elephant tourism venues in Thailand, which collectively housed 2,798 elephants, and allocated welfare scores on a scale of 1 (worst) to 10 (best). Scoring was based on nine categories, including hygiene, naturalness and diet quality. They found that 70% of elephants were kept in severely inadequate conditions, indicated by a score of 5 or lower. Some have argued that welfare problems may be exacerbated by limited regulations and insufficiently trained *mahouts* (ie traditional 'elephant keepers') (Kontogeorgopoulos 2009b; Schmidt-Burbach 2020). In a survey of 200 *mahouts* from 80 elephant camps in Thailand, it was found that 90% received less than six months training, with the majority (56.8%) having received only a month (Schmidt-Burbach 2020).

The extent to which harsh training methods, including dominance establishment through restraint and pain, are used is heavily disputed (Suter 2019; Bansiddhi *et al* 2020b; Schmidt-Burbach 2020). Elephants are not domesticated (Bansiddhi *et al* 2020b); thus, trainers have traditionally relied upon negative reinforcement and physical punishment to prevent any unpredictable behaviour (Fagen *et al* 2014; Wilson *et al* 2015). Some evidence suggests that this training can lead to increased mortality (Crawley *et al* 2020), as well as signs of post-traumatic stress disorder (Bradshaw *et al* 2005; Rizzolo & Bradshaw 2016). A study by Rizzolo and Bradshaw (2016) assessed 53 elephants, using interviews with caregivers, direct observations and documentation of trauma exposure. They found that 53% had altered self-capacities, 42% had cognitive symptoms, 53% had mood disturbances, while 38 and 34% exhibited avoidance behaviours and fear at trauma-related stimuli, respectively. Although some authors document increased use of positive reinforcement (Bansiddhi *et al* 2020a,b), there is still some uncertainty about whether this method alone can guarantee safety, especially when elephants are going to be in close contact with humans (Wilson *et al* 2015; Bansiddhi *et al* 2020a; Schmidt-Burbach 2020).

Elephant tourism is believed by some to provide substantial benefits in terms of better care and protection for captive elephants (Kontogeorgopoulos 2009b). As a consequence of elephant tourism, *mahouts* can cover the costs of owning an elephant, including provision of up to 200 kg of food per day (Kontogeorgopoulos 2009b; Ord & Jarernbanpot 2017). A concern associated with a complete ban on elephant tourism or mass-organised boycott is that this will severely damage *mahout* livelihoods and elephant welfare (for similar arguments made following the 1989 logging ban in Thailand, see Sricharatchanya 1989; Boyle 2017). However, it is important to note that *mahouts* are still economically very vulnerable; in many cases, their job is high risk with low pay (average US$270 per month) (Schmidt-Burbach 2020). Out of 200 interviewed *mahouts*, 38.5% had no savings and 70.5% received no medical insurance from their employer, despite almost half still being in pain from their injuries at the time of interview (Schmidt-Burbach 2020).

Elephant riding is one of the most popular tourism activities offered in Thailand (Schmidt-Burbach 2017). Kontogeorgopoulos (2009a) found that, when asked to choose among pairs of activities in terms of their appeal, 90% of visitors to elephant camps chose elephant riding over all other competing activities, such as bamboo rafting. Furthermore, a 2016 survey by World Animal Protection estimated a demand of up to 12.8 million elephant rides in Thailand annually (Schmidt-Burbach 2017). However, welfare concerns associated with elephant riding have received some attention by the media and animal rights organisations (Russo 2015; Jones 2016; Waters 2016; Kretzer 2017). This increased criticism has resulted in a shift from intensive activities, such as riding and performances, to more intimate experiences, such as feeding, walking and bathing in newer elephant camps (Bansiddhi *et al* 2018; Schmidt-Burbach 2020). It may also explain the increase in the number of venues that identify themselves as 'rescue centres', 'sanctuaries' or 'refuges', irrespective of whether these labels are appropriate (Schmidt-Burbach 2017).

Any close encounter between an elephant and a tourist necessitates a high degree of *mahout* control over the

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elephant's behaviour for the safety of the tourist (Kontogeorgopoulos 2009a; Bansiddhi *et al* 2020a; Schmidt-Burbach 2020). *Mahouts* and tourists are at high risk of injury, with 17 fatalities and 21 serious injuries reported by the media between 2016 and 2017 (Schmidt-Burbach 2020). Observation-only venues may offer a solution, as tourists can experience elephants safely without restricting their autonomy. In an assessment of 357 venues across Asia, where 73% of the elephants were in Thailand, Schmidt-Burbach (2020) found that observation-only venues had the highest (best) average welfare score of 8.8 out of 10; venues that offered washing and bathing scored an average of 6.7, while venues that offered saddled rides and shows scored an average of 4.0 and 3.5, respectively. It is important to note, however, that low contact does not ensure good elephant welfare. Several authors have acknowledged that observation-only venues may cause other welfare issues (eg obesity) if elephants are not also offered opportunities for foraging, social interaction and exploration (Bansiddhi *et al* 2018, 2020a; Norkaew *et al* 2018).

Despite the growing concern regarding the lives of animals under human care (Kendall *et al* 2006), the general public is often naïve to specific welfare issues (Burn 2011; Nekaris *et al* 2015). Moorhouse *et al* (2015) compared travel reviews from the website TripAdvisor against welfare scores, which were allocated based on the degree to which wildlife tourism attraction types (eg bear parks) fulfilled the 'Five Freedoms', a framework commonly used for welfare assessments (McCulloch 2012). For the eight wildlife tourism attraction types that were given the lowest welfare score of –3, comprising 24 individual attractions, the average percentage of negative reviews was only 20.5%. This suggests that the majority of tourists failed to recognise or respond to the negative welfare impacts at these facilities. Schmidt-Burbach (2017) suggested that it may be particularly difficult to identify distress in elephants, as their body language differs greatly from that of domestic animals. Additionally, photographs and videos of tourists interacting with elephants on social media platforms may decrease welfare concerns. Van der Meer *et al* (2019) demonstrated that exposure to images of big cats in close interactions with humans reduced both human fear of the animals and moral concerns about wildlife tourism attractions, while also increasing their desire to participate in these attractions.

It is unclear whether increased knowledge about elephant welfare would affect tourist decisions to participate in activities. Some suggest that people on vacation experience cognitive dissonance and engage in less ethical behaviour (Juvan & Dolnicar 2014; Moorhouse *et al* 2017); thus, it could be speculated that visitors may choose to ignore welfare concerns affecting elephants, given their desire to participate in activities. Recognition of animal welfare issues has, however, been associated with a decreased willingness to visit and support facilities (Miller 2012; Godinez *et al* 2013; Moorhouse *et al* 2015). A study by Bach and Burton (2017) showed that despite placing great value on proximity to dolphins, 80% of visitors were willing to sacrifice being close to the animals once they were made aware that this compromised dolphin welfare. Indeed, it appears that if tourists were aware of the welfare concerns associated with their actions, they may be willing to forfeit higher levels of contact with wildlife.

Objectives

The overall aim of this study was to investigate participants' willingness to support an elephant attraction and their perceived emotional value from the experience based on the affective state of an elephant and their level of contact with it. Specifically, we provided participants with one of four vignettes that each described a hypothetical elephant but differed in the affective state of the elephant (feels excellent, feels terrible) and the level of contact with tourists (low, high).

Materials and methods

This research was approved by The University of British Columbia's (UBC) Behavioural Research Ethics Board Protocol (H18-03226). The survey instrument was created using the UBC-hosted version of Qualtrics (Provo, UT, USA).

Recruitment

A convenience sample of 918 participants from the United States were recruited using Amazon's Mechanical Turk (MTurk). Studies have shown that MTurk participants are more attentive (Hauser & Schwarz 2016) and demographically diverse (Buhrmester *et al* 2011; Casler *et al* 2013) than standard internet and college student samples. The survey ran from 17–25 January, 2019.

Study design

We used a convergent parallel mixed methods design, in which quantitative and qualitative data were collected from all participants at the same time and then analysed separately (Creswell & Clark 2011). In this study, quantitative questions were followed by a qualitative response from participants (Appendix 1; see supplementary material to papers published in *Animal Welfare*: https://www.ufaw.org.uk/the-ufaw-journal/supplementary-material). Specifically, we used the Contrastive Vignette Technique (CVT), which relies on manipulating the variables of interest in each vignette, while keeping all other variables constant (Burstin *et al* 1980). Following this approach, a fully crossed 2 × 2 experimental design was used to produce four vignettes (and the associated hypotheses) describing the life of a hypothetical elephant (Table 1). The vignettes manipulated the affective state of the elephant, based on a study by Robbins *et al* (2018): feels excellent (FE) vs feels terrible (FT); as well as the level of contact the elephant had with tourists: low contact (LC) vs high contact (HC).

Participants were randomly assigned to read one of the four vignettes and were blind to the treatment (Table 1). Before seeing the vignette, they were told: 'the scenarios you are about to read may not be realistic and so you should suspend disbelief — try to imagine what you are reading is true.' Asking participants to suspend disbelief is a common technique used in philosophical thought experiments (Doris

Table 1 Vignettes describing the life of a hypothetical elephant.

Feels excellent, low contact with tourists (FE/LC)	*Feels terrible, low contact with tourists (FT/LC)*
Molly is a female Asian elephant who lives in an elephant attraction in northern Thailand, alongside 60 other elephants. Tourists are **not allowed** to touch **or** ride her. Tourists can take photos **of** Molly. Traditional elephant handlers feed her grasses twice a day, and occasionally give her sugar cane and bananas. Molly **does not spend much** of her time in close contact with tourists. A team of neuropsychologists and elephant behaviour experts have recently determined that Molly spends almost all of her time feeling **excellent**	Molly is a female Asian elephant who lives in an elephant attraction in northern Thailand, alongside 60 other elephants. Tourists are **not allowed** to touch **or** ride her. Tourists can take photos **of** Molly. Traditional elephant handlers feed her grasses twice a day, and occasionally give her sugar cane and bananas. Molly **does not spend much** of her time in close contact with tourists. A team of neuropsychologists and elephant behaviour experts have recently determined that Molly spends almost all of her time feeling **terrible**
Hypothesis: Participants will be second most willing to support the elephant attraction and have the second greatest perceived emotional value from the experience. Concerns for welfare will overweigh desire for proximity (Orams 2000; Finkler & Higham 2004; Bach & Burton 2017; Verbos *et al* 2018)	Hypothesis: Participants will be the least willing to support the elephant attraction and have the smallest perceived emotional value from the experience. Desire for both proximity (Baun *et al* 1984; Beetz *et al* 2012; Belicia & Islam 2018) and Molly's positive welfare (Kendall *et al* 2006; Cole 2011; Miller 2012; Godinez *et al* 2013; Pettersson *et al* 2016) will not be satisfied
Feels excellent, high contact with tourists (FE/HC)	*Feels terrible, high contact with tourists (FT/HC)*
Molly is a female Asian elephant who lives in an elephant attraction in northern Thailand, alongside 60 other elephants. Tourists are **allowed** to touch **and** ride her. Tourists can take photos **with** Molly. Traditional elephant handlers feed her grasses twice a day, and occasionally give her sugar cane and bananas. Molly **spends most** of her time in close contact with tourists. A team of neuropsychologists and elephant behaviour experts have recently determined that Molly spends almost all of her time feeling **excellent**	Molly is a female Asian elephant who lives in an elephant attraction in northern Thailand, alongside 60 other elephants. Tourists are **allowed** to touch **and** ride her. Tourists can take photos **with** Molly. Traditional elephant handlers feed her grasses twice a day, and occasionally give her sugar cane and bananas. Molly **spends most** of her time in close contact with tourists. A team of neuropsychologists and elephant behaviour experts have recently determined that Molly spends almost all of her time feeling **terrible**
Hypothesis: Participants will be most willing to support the elephant attraction and have the greatest perceived emotional value from the experience. Desire for both proximity (Baun *et al* 1984; Beetz *et al* 2012; Belicia & Islam 2018) and Molly's positive welfare (Kendall *et al* 2006; Cole 2011; Miller 2012; Godinez *et al* 2013; Pettersson *et al* 2016) will be satisfied	Hypothesis: Participants will be second least willing to support the elephant attraction and have the second smallest perceived emotional value from the experience

This shows the varying affective state of the elephant (feels excellent/feels terrible) and the level of contact the elephant has with tourists (low/high) and the associated hypotheses for participant responses across the four treatments: feels excellent and low contact (FE/LC), feels excellent and high contact (FE/HC), feels terrible and low contact (FT/LC), and feels terrible and high contact (FT/HC). Participants (n = 918) were randomly assigned to one of the four treatments. The factors being manipulated are shown in bold for emphasis and were not presented to participants in this way.

& Stich 2007). To assist in identifying participants that were unable to suspend disbelief, a manipulation check asking, 'do you believe that Molly spends all her time feeling [excellent/terrible]?', was included directly after presentation of the vignette (Table 2). We removed participants who failed the manipulation check and therefore did not receive the intended effect of treatment from the final sample, as is common practice in survey research (Carpenter *et al* 2016; Greenbaum *et al* 2017; Robbins *et al* 2018).

After reading the vignette and answering the manipulation check question, participants responded to randomised questions assessing willingness to support the elephant attraction, as well as their perceived emotional value from the experience (Table 2). These questions used a 7-point Likert-type scale (1 = strongly disagree, 4 = neither agree nor disagree, 7 = strongly agree). They were followed by an open-ended question: 'please explain your above answers', and a series of demographic questions on age, gender, pet ownership, area, level of education, household income and previous participation in elephant tourism (Appendix 1; https://www.ufaw.org.uk/the-ufaw-journal/supplementary-material).

Data analysis

Quantitative data were analysed using the Statistical Analysis System (SAS) (version 9.4, SAS Institute Inc, Cary, NC, USA). We calculated internal validity using Cronbach's alpha, which was high for both general constructs: 0.95 for willingness to support (four measures) and 0.95 for perceived emotional value (four measures). Given these results, participant responses were combined by averaging to create a composite score for each general construct (ie willingness to support the elephant attraction and perceived emotional value from the experience) (Connelly 2011). Figures were generated using the software R (R Core Team 2018) on the interface RStudio (RStudio Team 2016) with packages, dplyr (Wickham *et al* 2017), ggplot2 (Wickham 2009), ggpubr (Kassambara 2017) and tidyr (Wickham & Henry 2018).

A multiple linear regression approach was used to build two separate models for the two general constructs: willingness to support the elephant attraction and perceived emotional value from the experience. The general construct was used

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Table 2 Measures used to assess willingness to support an elephant attraction and the perceived emotional value from the experience based on the affective state of, and level of contact with, an elephant.

General construct	Question(s) used to assess	Adapted from
Willingness to support	It is important to have elephants in this tourist attraction	Miller (2012)
	It is important to support this elephant attraction	
	I would be interested in paying money to this elephant attraction in the future	
	I would be interested in visiting this elephant attraction in the future	
Perceived emotional value	This elephant attraction would give me feelings of well-being	Williams & Soutar (2009)
	This elephant attraction would be exciting	
	This elephant attraction would make me elated	
	This elephant attraction would make me feel happy	
Manipulation check	Do you believe that Molly spends all her time feeling [excellent/terrible]?	Robbins *et al* (2018)

as the outcome variable, and the affective state of the elephant, the level of contact with tourists, their interaction, and demographic variables (ie age, gender, pet ownership, area, level of education, household income and previous participation in elephant tourism) were used as predictor variables. Demographic variables were included in the model to control for the potential confounding effect on the variables of interest.

For the open-ended responses, coding was done using NVivo (version 11.4.3, QSR International, Burlington, MA, USA) qualitative analysis software. There were no *a priori* themes, so coding was performed inductively as codes emerged from participant responses (Miles *et al* 2014). A codebook was developed using descriptive coding to assign labels to data that were later organised into general themes (Miles *et al* 2014). In order to demonstrate the range of responses rather than the prevalence of codes, a code was only recorded once even if it occurred multiple times in the same response. Additionally, all codes were recorded if multiple codes were present in the same response.

To improve reliability and definitional clarity of codes, the first two authors (MEW and KEM) independently coded a sub-sample of responses and discussed any discrepancies until a consensus was reached. After updating the codebook, this step was repeated until the final codebook was agreed upon by the two authors. The first author (MEW), then coded all of the responses using the revised codebook. Quotes were selected to best exemplify codes in the results. For ease of reading or clarity, some quotes were modified with ellipses, representing omitted text, or square brackets, representing replaced or added text. Each participant was identified by a unique alpha-numeric code (eg P121) and their treatment (eg FE/LC).

Results and discussion

Quantitative findings

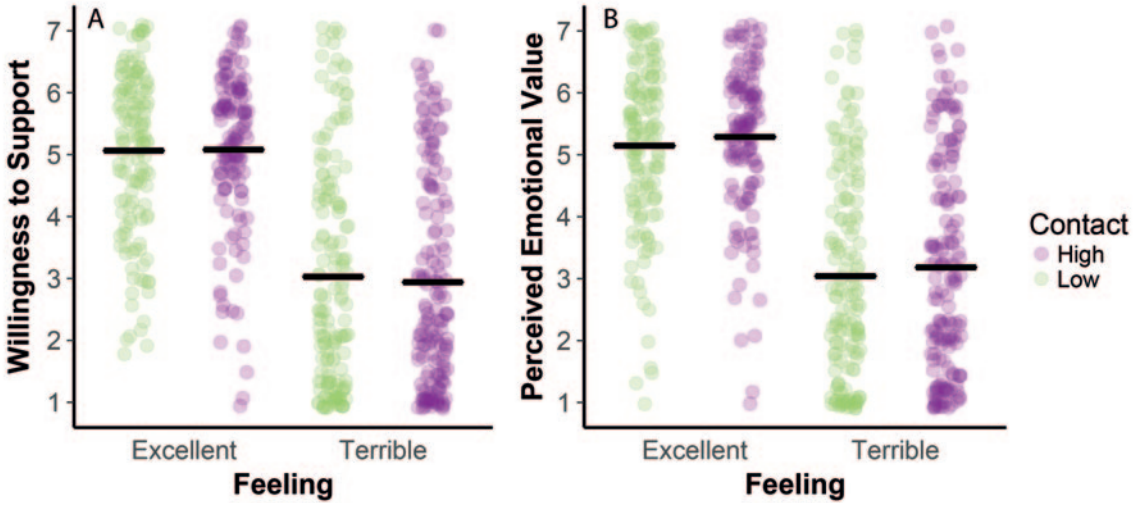
A total of 918 participants were recruited for this study. After excluding incomplete surveys (n = 69), failed manipulation checks (n = 227) (Robbins *et al* 2018) and incomplete qualitative responses (n = 32) (Mazzola *et al* 2011), the sample consisted of 590 participants. The mean age was 36 years (range 18–81); 268 (45.4%) were men, 320 (54.2%) were women and 2 (0.3%) identified as a third, 'other', gender. Given the small sample size of the 'did not graduate from high school' education category, this category was combined with the 'graduated from high school, did not attend college' category (Kirch 2008).

Participants showed greater willingness to support the elephant attraction when the elephant felt excellent as opposed to when the elephant felt terrible (FE vs FT) ($\beta = 1.94$, SE = 0.18; $P < 0.0001$) (Figure 1). We observed no association between willingness to support the elephant attraction and the level of contact with the elephant (HC vs LC) ($\beta = -0.06$, SE = 0.17; $P = 0.73$) (Figure 1). Additionally, the interaction between feeling and contact was not significant ($\beta = 0.16$, SE = 0.25; $P = 0.52$).

Willingness to support the attraction decreased as age increased ($\beta = -0.02$, SE = 0.01; $P < 0.05$) (Table 3). Participants who had previously participated in elephant tourism had greater willingness to support the elephant attraction ($\beta = 0.88$, SE = 0.20; $P < 0.0001$) than those who had not (Table 3). The overall model fit for willingness to support was $R^2 = 0.36$.

Similarly, participants had greater perceived emotional value from the described elephant attraction when they were told that the elephant felt excellent compared to when they were told that the elephant felt terrible (FE vs FT) ($\beta = 2.00$, SE = 0.17; $P < 0.0001$). There was no association between

Figure 1



Responses by participants (n = 590) asked questions designed to assess (A) willingness to support an elephant attraction and (B) perceived emotional value from the experience across four treatments: feels excellent and low contact (FE/LC), feels excellent and high contact (FE/HC), feels terrible and low contact (FT/LC), and feels terrible and high contact (FT/HC). Participants were randomly assigned to one of the four treatments and indicated their agreement with statements using a seven-point Likert-type scale (1 = strongly agree, 4 = neither agree nor disagree, 7 = strongly disagree). Responses to individual questions were averaged to create a composite score for willingness to support and perceived emotional value for each participant, which are shown as dots. The horizontal black line on the graphs shows the mean of these scores.

Table 3 Effect of treatment on willingness to support an elephant attraction by demographic category (n = 590).

Variable	β	SE	*t*-value	*P*-value
Age	–0.015592	0.005549	–2.81	**0.0051**
Male (vs female)	0.206730	0.128128	1.61	0.1072
Pets (vs no pets)	0.224562	0.150279	1.49	0.1356
Urban (vs rural)	0.153194	0.186038	0.82	0.4106
Suburban (vs rural)	–0.050490	0.163981	–0.31	0.7583
Education	–0.018935	0.054968	–0.34	0.7306
Household income	0.038979	0.032550	1.20	0.2316
Previous participation (vs no previous participation)	0.879339	0.198794	4.42	**< 0.0001**

Given the small sample size of the 'other' gender category, its analysis was excluded from this table. The effects on participant responses are shown by coefficients (slope β and SE), the *t*-value and corresponding probability that these values differ from 0. Bold values indicate $P < 0.05$.

this construct and the level of contact with the elephant (HC vs LC) (β = 0.15, SE = 0.17; $P = 0.35$) (Figure 1) and the interaction between feeling and contact was not significant (β = 0.06, SE = 0.25; $P = 0.81$).

As with willingness to support the elephant attraction, the perceived emotional value was greater for younger participants (β = –0.02, SE = 0.01; $P < 0.0001$) and those who had previously participated in elephant tourism (β = 0.67, SE = 0.19; $P < 0.05$) than those who had not (Table 4). The overall model fit for perceived emotional value was $R^2 = 0.37$.

Both the participants' willingness to support the elephant attraction and their perceived emotional value from the experience were affected by Molly's affective state. Participants showed greater willingness to support the elephant attraction and greater perceived emotional value from the experience when she was feeling excellent rather than terrible. This aligns with previous research showing that recognition of welfare concerns, such as stereotypies, decreases support for facilities (Miller 2012; Godinez *et al* 2013).

In contrast to our prediction, the participants in this study did not favour high contact with Molly when compared

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Table 4 Effect of treatment on perceived emotional value from an elephant attraction by demographic category (n = 590).

Variable	β	SE	*t*-value	*P*-value
Age	–0.023497	0.005377	–4.37	**< 0.0001**
Male (vs female)	0.201381	0.124165	1.62	0.1054
Pets (vs no pets)	0.245520	0.145631	1.69	0.0924
Urban (vs rural)	–0.014907	0.180284	–0.08	0.9341
Suburban (vs rural)	–0.051040	0.158909	–0.32	0.7482
Education	–0.018497	0.053268	–0.35	0.7285
Household income	0.043658	0.031543	1.38	0.1669
Previous participation (vs no previous participation)	0.672272	0.192645	3.49	**0.0005**

Given the small sample size of the 'other' gender category, its analysis was excluded from this table. The effects on participant responses are shown by coefficients (slope β and SE), the *t*-value and corresponding probability that these values differ from 0. Bold values indicate $P < 0.05$.

to low contact in either their willingness to support the elephant attraction or in their perceived emotional value from the experience. Despite the general public's interest in interactions with animals (Belicia & Islam 2018), our results suggest that there is growing awareness about welfare issues when the public interacts with wildlife. This change in public perception, about potential concerns associated with intensive activities, may explain why some newer elephant camps do not offer riding and performances (Bansiddhi *et al* 2018). Similarly, Bach and Burton (2017) suggested that participants may be willing to sacrifice proximity to wild animals when made aware of negative welfare outcomes associated with close proximity. Although participants in the current study did not favour the high contact scenarios, their willingness to support the elephant attraction and perceived emotional value declined when the elephant was feeling terrible in this condition.

Many tourists who participate in elephant tourism may be unaware of the welfare concerns that the animals face, as indicated by the high percentage of tourists who do not recognise or respond to attractions that display negative welfare (Moorhouse *et al* 2015). Our work provides additional evidence that tourists may be less inclined to participate in high contact elephant tourism if they were made aware of potential negative animal welfare outcomes associated with their participation, such as restricted autonomy (Kontogeorgopoulos 2009a; Bansiddhi *et al* 2020a; Schmidt-Burbach 2020). It is unlikely that tourists who participate in elephant camps actively ignore welfare concerns, but many may simply be unaware of the negative consequences for the animal. Affective states may be an effective way to educate potential tourists about the welfare concerns associated with elephant tourism, therefore reducing support for low welfare venues and encouraging a shift to high welfare venues that offer more observational forms of tourism.

Qualitative findings

Qualitative analysis was conducted on the open-ended responses of the 590 participants. Four main themes emerged from the qualitative responses: i) facility characteristics; ii) elephant characteristics; iii) human-elephant interactions; and iv) undeveloped arguments. These were used to justify participants' willingness to support the elephant attraction and their perceived emotional value from the experience. Responses varied in the positive and negative valences assigned to each theme.

Facility characteristics

Participant responses were influenced by the purpose of the facility, opinions on captivity, the environment at the facility and how the facility used the money from tourism.

Purpose: Although the purpose of the elephant attraction was not mentioned in the vignette, participants generally assumed that the aim of the attraction was to provide tourist entertainment, education, or contributions to conservation (including rehabilitation efforts). These aims are similar to those of a zoo; public perceptions of zoo roles have been explored in multiple studies (Reade & Waran 1996; Morgan & Hodgkinson 1999; Tofield *et al* 2003). While some authors believe that the captive elephant population could serve a conservation purpose (Suter 2019), others argue that the high demand for elephants in tourism encourages laundering of wild animals and hence threatens wild populations (Schmidt-Burbach 2017). Whether education of visitors to the potential negative conservation consequences associated with elephant camps will reduce support *per se* remains to be seen.

Our participants frequently linked being able to see or interact with elephants with increasing conservation awareness. For example, one participant said, "I think it is important to let people get up [close] and personal with animals that otherwise would be wild. This way we help make sure that wild elephants are helped when needed because people will feel a connection with them" (P378-

FE/HC). This is supported by Hacker and Miller (2016), who investigated the conservation intent of visitors after viewing African elephants (*Loxodonta africana*) in a safari park. Visitors who experienced up-close encounters showed the greatest change in conservation intent. Similarly, other research has shown that zoo visitors who have strong positive emotional experiences, often stimulated by viewing an animal up close, are more likely to be conservation-minded (Powell & Bullock 2014; Luebke *et al* 2016; Miller *et al* 2018). However, it may be that changes in conservation intent only persist in the short-term (Hughes 2013).

Captivity: Remarks about keeping animals in captivity were common, with many participants expressing a strong moral opposition to this practice. Sometimes, other themes were used to support their arguments, such as the purpose of the facility or the affective state of the animal; "I don't believe that animals should be kept in captivity for the sole purpose of human entertainment, especially in the case where it is known that the elephant is unhappy" (P583-FT/HC). Although there was no mention of a zoo in the vignette, participants frequently discussed how they felt about zoos; views were largely mixed, with some people expressing support and others expressing dislike for them. The assumption by many that elephant camps have the same roles as zoos (Reade & Waran 1996; Morgan & Hodgkinson 1999; Tofield *et al* 2003) may explain why many of our participants compared their experience of these institutions to this situation.

Reasons cited as to why it was acceptable to keep Molly in captivity also included concerns regarding the elephant's ability to survive in the wild; "perhaps it is not safe in the wild and [the elephant is] not able to take care of itself in the wild" (P253-FT/LC). Others challenged the notion of captivity, despite acknowledging that this may come with increased risk of death. For instance, in the words of one participant: "I find these types of attractions detestable and they provoke a deep sadness for me. I feel extremely sorry for these animals, even though… If they were released into the wild, they may die" (P22-FE/LC). The origin of the animal was also a feature of interest, with some participants suggesting that it may be more acceptable to keep elephants that have been born in captivity, and less so to have captured them from the wild. Whether animals can be successfully re-integrated into wild populations is a hotly discussed topic; several studies have documented the successful rehabilitation and reintroduction of captive-raised elephants into the wild (Jayawardena *et al* 2002; Evans *et al* 2013a,b). The public interest in places of refuge or rehabilitation may explain the increase in venues that are misleadingly labelled 'sanctuaries' (Schmidt-Burbach 2017).

Environment: Despite not being described in the vignettes, the physical environment of the facility, including the habitat and available space, was mentioned. Participants emphasised that Molly's habitat should resemble her native land and she should have sufficient space. Some assumed that the elephants were kept in cages, for example, one participant said, "I think if the elephant is unhappy, it is due to the fact that she is caged up" (P191-FT/LC). Although elephants are not normally housed in cages, Schmidt-Burbach *et al* (2015) found that 86% of 1,644 assessed elephants in Thailand had their movement restricted during the day by short chains, except when used for tourism activities. In contrast, some of the more progressive venues now keep their elephants in forests on longer chains or have constructed fenced enclosures, where the elephants can move freely and express natural behaviours (Schmidt-Burbach 2017).

When referencing the social environment at the facility, participants focused on Molly's ability to have social contact with other elephants; "Molly… has the companionship of a full-sized herd" (P89-FE/LC). Although we stated that Molly is with 60 other elephants, social bonding is typically difficult at elephant camps (Kontogeorgopoulos 2009b; Schmidt-Burbach *et al* 2015). The management of elephants prevents the natural formation of matriarchal family groups and provides minimal opportunity for social interactions between conspecifics; these challenges are also likely exacerbated by the high turnover of rented elephants (Kontogeorgopoulos 2009b). Bulls are also more likely to be kept isolated, especially during *musth* (ie, a temporary state of heightened aggressive behaviour), as they are difficult to manage and socialise (Duer *et al* 2016; Bansiddhi *et al* 2018).

Aspects of the environment deemed important to elephant welfare were also important to participants' perceived enjoyment. In particular, participants commented on the elephant in the context of its natural environment, stating that this was important for both the elephant's quality of life and their own pleasure; natural environments have been previously reported as improving human health and emotional well-being (Hartig *et al* 2011; Bratman *et al* 2012; McMahan & Estes 2015). Observing wildlife in a natural setting has also been reported to improve human health (Coolman *et al* 2020) and benefit visitors by providing an accurate and exciting representation of the animals' natural state (Woods 1998). Collectively, these findings, taken together with our own, suggest that there are benefits to providing tourists the opportunity to observe elephants in a more natural environment, which would no doubt also improve elephant welfare.

Use of money: Many participants stressed the importance of fiduciary responsibility by the facility that housed Molly. Using funds for what they perceived were socially acceptable goals, including better elephant care and support for the local and broader Thai community, were viewed as positive; whereas, only focusing on profit was negatively perceived. One participant stated, "it is saddening, what humans do to make money" (P474-FT/HC). Additionally, some participants expressed concern regarding potential downstream consequences if the venue was not open to visitors; "since the attraction exists, it is better to support it than not, as if it is not supported, the elephants could end up in dire conditions or not be well taken care of" (P544-FT/HC). These concerns may be valid, as boycotting elephant attractions could negatively affect the well-being of *mahouts* and their

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elephants (Sricharatchanya 1989; Kontogeorgopoulos 2009b; Boyle 2017), at least in the short term. There appears to be merit in supporting high welfare venues and encouraging a shift away from anthropocentric and intensive facilities (Schmidt-Burbach 2017).

Elephant characteristics

Participants were extremely concerned about the individual elephant — Molly — described in the text, making numerous references to her welfare and treatment. In some cases, these discussions were extended to include other elephants at the attraction and beyond. The participants' general interest in elephants was also mentioned.

Welfare: Given our design, we were not surprised that the affective state of the elephant was the most prominent theme raised in participant responses. Many participants imagined how they would feel in Molly's situation. For example, one participant wrote, "I feel that being left alone in my habitat with others like me and having no human interaction, as an elephant, I would feel excellent too" (P34-FE/LC). This response is unsurprising, given that empathy for animals in zoos and aquaria has been reported (Young *et al* 2018).

In addition to commenting on Molly's affective state, participants made numerous statements relating to her physical welfare (for comments on biological functioning, see Fraser *et al* 1997). These included remarks about the health and safety of the elephants, particularly in relation to their diet, which they perceived to be of a high quality. For instance, one participant stated that "the elephants are fed well and are hardly in contact with humans" (P49-FE/LC). This is one example where public perception and practice appear to be misaligned; given that a number of studies (Godfrey & Kongmuang 2009; Kontogeorgopoulos 2009b; Schmidt-Burbach *et al* 2015; Bansiddhi *et al* 2019; Norkaew *et al* 2019) have reported that the quality of the diet fed to working elephants at camps is substandard. Additionally, tourism activities reduce the amount of time the elephants can spend feeding, which they normally do for up to 18 h a day in the wild (Kontogeorgopoulos 2009b).

Many participants stressed the importance of captive elephants being able to live a reasonably natural life, as voiced by one participant who said that elephants should be "allowed to do what they do normally in the wild" (P560-FT/HC). Additionally, participants emphasised their concern about whether the captive elephants were being forced to engage with people. For example, a participant in the LC treatment commented, "they aren't forcing them to participate in activities with humans, which I like" (P113-FE/LC). Similarly, Normando *et al* (2018), reported that a zoo 'giraffe feeding' programme was deemed appropriate from an animal welfare standpoint, as long as the animals had the choice to participate or withdraw from the visitors.

Treatment: Participants exposed to the FE treatments frequently discussed treatment of the elephant using a positive tone such as, "I'm happy to hear that the elephant is treated humanely and is happy" (P3-FE/LC). In contrast, the participants in the FT treatments often assumed that captive elephants received poor treatment. There is some evidence that presentation of information can influence stakeholder responses to information (Vigors 2019), such as emphasising positive versus negative welfare outcomes. Some participants also referenced beliefs about the general mistreatment of elephants or other captive animals; "I have seen many videos about the way they train those creatures, and it is sad. They poke them with a sharp stick until they obey, and that is animal cruelty" (P350-FE/HC). This view may reflect the increasing public concern for the treatment of animals in tourism, and the broad communication of this sentiment over social media (Mkono & Holder 2019).

Interest in elephants: Participants conveyed a specific interest in elephants, occasionally naming them as their favourite animals. Reference to certain qualities of elephants were sometimes included, such as their intelligence, size, friendliness, funniness and aesthetic beauty. For example, "I am fascinated with elephants and their behaviour. They are one of the largest animals and also the most gentle" (P374-FE/HC). Similarly, Carr (2016) found that zoo visitors favoured animals for their cute, playful and entertaining attributes. Contrasting these beliefs, elephants are also recognised by their handlers as one of the most dangerous animals; reports indicate that elephants have severely injured and killed many tourists (Schmidt-Burbach 2017). Participants also linked the intelligence of elephants to their lack of suitability for such attractions. Indeed, elephants are renowned for their cognitive abilities (Bates *et al* 2008), an argument used for the unsuitability of other intelligent animals to captive environments (Clark 2011; Grimm 2011).

Human-elephant interactions

Many participants focused on the human-elephant interaction, categorised by their proximity to the elephants, the frequency and type of interactions. They also considered the effect of tourist presence on elephants.

Proximity: Participants varied in terms of whether they perceived it was good or bad for them to have close contact with the elephant. For example, some participants in the LC treatments clearly stated that "seeing an elephant from afar is not a very interesting attraction" (P3-FE/LC). Others, however, advocated for no contact with elephants, suggesting that they should only be observed from afar. Interestingly, several participants made it clear that contact would be preferable, but not at the cost of the well-being of the elephant: "I like the idea of being able to be up close to the elephants, but not at the expense of the animal's happiness" (P521-FT/HC). Bach and Burton (2017) reported that participants viewing dolphins placed the greatest value on proximity but were also willing to trade proximity for better dolphin welfare.

Frequency of interactions: Participants also considered the frequency of tourist interactions with the elephant. Similar to the discussions on proximity, some expressed the view that a low frequency of interactions was not desirable, "since tourists don't interact with the elephant at all, I don't think it's

very exciting" (P41-FE/LC). Others specifically supported the attraction based on the low frequency of interactions described in the LC treatments, and were unsupportive for the same reason in the HC treatments, "I support elephant attractions that do not include frequent contact with visitors" (P58-FE/LC). The presence of visitors and thus the frequency of interactions can be enriching for some species and very aversive for others (Davey 2007; Hosey 2008). Some evidence suggests that elephants may be more committed to interactions with bonded individuals (such as handlers or guides), as opposed to tourists (Rossman *et al* 2017).

Type of interactions: Participants discussed the different types of activities they could engage in with the elephant, including observation, photography, performance, and high contact interactions, such as riding, touching and feeding. Opinions on high contact activities were mixed. Some participants expressed a great desire to interact with the elephant in this manner, "I love elephants… One of my life goals is to touch and pet one! I think they are adorable" (P270-FT/LC). Other participants, however, were against these kinds of activities, especially riding, "I feel like this is a good place for elephants, considering they don't get used for rides" (P122-FE/LC). Although the communication of welfare concerns by media and animal rights organisations may have decreased the popularity of elephant riding and performances (Russo 2015; Jones 2016; Waters 2016; Kretzer 2017), there are still mixed opinions about high contact activities with wildlife, likely exacerbated by the frequent presentation of human-wildlife interactions on social media (Belicia & Islam 2018; van der Meer *et al* 2019).

Effect of tourist presence: The impact of human-elephant interactions was often discussed, with some participants believing that elephants enjoy the presence of tourists and others believing it to be detrimental. Participants also took opposing positions when discussing Molly's affective state, with some believing that the lack of tourists caused Molly to feel excellent (ie FE/LC treatment) and others believing this caused Molly to feel terrible (ie FT/LC treatment). Participants in both the FE/HC and the FT/LC treatment suggested that the elephant enjoyed, or even needed, interactions with tourists. For example, one participant commented, "Molly needs to interact with people so as to not feel secluded… She needs to be shown a bit of affection" (P177-FT/LC). Exposure to images of wild animals interacting closely with humans, as often shown on social media, may encourage this belief (Belicia & Islam 2018; van der Meer *et al* 2019). Although close encounters with tourists require strict control over the elephant for safety reasons (Kontogeorgopoulos 2009b; Schmidt-Burbach 2017; Bansiddhi *et al* 2020a), interactions with bonded *mahouts* may have welfare benefits for the elephant, including reduced stress (Rossman *et al* 2017; Carlstead *et al* 2019; Bansiddhi *et al* 2020a).

Undeveloped arguments

Some participants were unsure about their judgements because of conflicted feelings, while others felt they did not have enough information to make a justified assessment.

Conflicted feelings: Participants often expressed some conflict in the way that they felt about the attraction, particularly when they considered that their personal desire to see it might negatively affect the well-being of the elephant. A participant in the FT/HC treatment wrote, "I don't want Molly to feel terrible, but she makes me feel good, so I'm kind of split" (P496-FT/HC). These feelings also arose through expression of guilt, and when participants weighed humans' needs against those of elephants, "I think that something like this elephant attraction should be set up to benefit the elephants rather than benefit the humans" (P98-FE/LC). The trade-off between social and economic benefits to humans, and the welfare of the involved animals, is often discussed with regards to wildlife tourism activities (Bach & Burton 2017; Moorhouse *et al* 2017; Ziegler *et al* 2019). Unfortunately, most tourists lack the specialist knowledge to make this evaluation (Moorhouse *et al* 2017). This conflict may also be a result of the cognitive dissonance between attitudes to wildlife protection and vacation behaviour (Juvan & Dolnicar 2014).

Not enough information: Lack of information resulted in a small number of participants requesting more information or stating they did not know enough about the attraction to make a decision. Other participants described their responses as 'gut feelings' or explained what assumptions they were making. One participant articulated their assumptions as follows, "I made most of my answers based on the assumption that the attraction probably isn't benefiting, and might even be harming, most of the elephants, even though you only told me Molly was sad" (P200-FT/LC). Other studies have shown similar responses to a lack of information (Cardoso *et al* 2018; Mills *et al* 2018).

Assumptions about the elephant attraction and Molly's life included, but were not limited to, the physical environment the facility provided for the elephants, Molly's health status, and her ability to live naturally. Although some of these assumptions may have been a result of limited information in combination with preconceived notions about elephant tourism, participants may have also been making normative judgements based on how Molly was feeling. For example, they may have assumed that Molly was healthy because she was feeling excellent. This is similar to a previous study by Robbins *et al* (2018), which suggested that participants may have distinguished how a chimpanzee was feeling from normative evaluations about its life. Correspondingly, assumptions in the current study may have been made in accordance with Molly's affective state.

Limitations and future research

One limitation of our design was the use of a convenience sample of US participants; thus, our findings are not generalisable (Serpell 2004; Su & Martens 2017), though they are transferable. Additionally, the general public may be more concerned about some species more than others (Schlegel & Rupf 2010; George *et al* 2016; Mills *et al* 2018). This may be especially relevant in the case of elephants, as many participants commented on their intelligence, which is

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generally associated with increased capacity for reason, feeling and emotion compared to other animals (Woods 2000; Carr 2016). Consequently, participants may be more influenced by the affective state of such an animal.

A major difficulty with this study is the attitude-behaviour gap; the disconnect between what ethical consumers say they are going to do and what they actually do when it comes to making a decision (Carrington *et al* 2010; Juvan & Dolnicar 2014). There is evidence that tourists experience cognitive dissonance when making ethical choices abroad, where they may be truly ignorant or be using various strategies to cope with the consequences of their vacation behaviour (Juvan & Dolnicar 2014). In the context of wildlife tourism, this may involve self-deception or comparison to the behaviour of others (Moorhouse *et al* 2017). Vigors (2018) suggested 'nudging' as a method of closing the attitude-behaviour gap, by influencing individuals to make choices that align with their own intentions (eg articulating social norms). Additionally, providing tourists with sufficient information (eg through eco-certification schemes, as suggested by Moorhouse *et al* 2017) may prevent cognitive dissonance and allow tourists to make informed decisions about the venues they patronise (Juvan & Dolnicar 2014).

Although the manipulation check was designed to identify participants who failed to follow the experimental prompt and thus did not receive the intended effect of the treatment, this technique has received some criticism (Aronow *et al* 2015; Fayant *et al* 2017; Hauser *et al* 2018). Manipulation checks run the risk of increasing, removing or interacting with the effects of a manipulation, as well as introducing bias (Aronow *et al* 2015; Hauser *et al* 2018). We tried to reduce the number of participants that were removed by clearly stating that participants should try to suspend disbelief (Aronow *et al* 2015). A large number of our participants failed our manipulation check (n = 227). The qualitative results from these participants indicated that many would have needed more information to have fully trusted the scientists' assessment, although they were still influenced by it. Consequently, when we ran the multiple linear regression including the failed manipulation checks, willingness to support the elephant attraction and perceived emotional value were still significantly greater when the elephant felt excellent as opposed to when it felt terrible and still not significantly affected by level of contact. Although we elected not to include these data, it should be noted that justification for affective state assessments may be important in communications with the general public.

We acknowledge that this study does not explore all of the components of these complex facilities and how they affect public perception. The level of contact was categorised as either low or high in the treatments; whereas, in reality, there is great variance in the types of activities that facilities offer, how close tourists can get to the elephant and the frequency of interactions. The inclusion of riding in the high contact treatments may have caused more negative responses due to the recent attention this activity has received in the media (Russo 2015; Waters 2016; Kretzer 2017), even though less-intensive activities such as bathing still involve welfare concerns (Bansiddhi *et al* 2018; Schmidt-Burbach 2020). Future studies should investigate individual activities in order to understand the animal welfare implications associated with each and whether there is a difference in public perception between them. Furthermore, understanding the different demographics of tourists who are actively considering or involved in elephant tourism may provide additional insights. These types of studies will help to provide targeted education about potential welfare consequences when engaging in tourism activities.

Another important area of research lies in the views and perceptions of the *mahout*, arguably a stakeholder with the greatest potential to affect elephant welfare. Understanding the needs of the local people, and their perception of different types of tourism, will assist the shift to high welfare tourism, as well as the development of alternative livelihoods (Schmidt-Burbach 2017). Existing research suggests that *mahouts* want to understand their elephants and provide good care for them, and that, as they are important reservoirs of information, working with them could assist in improving elephant welfare at tourism venues (Hart 1994, Campos-Arceiz *et al* 2008; Ord & Jarernbanpot 2017; Schmidt-Burbach 2020).

Animal welfare implications

Although some evidence suggests that animal welfare is unlikely to be improved through government or industry regulations (Moorhouse *et al* 2017), there is potential for tourism preferences to change with effective education about the welfare concerns that arise in certain facilities. Creating eco-certification schemes and professional reviews on influential travel review sites may be one approach to effectively inform tourists (Chipkin 2015; Moorhouse *et al* 2017). TripAdvisor has already begun this process by creating an animal welfare education portal and banning ticket sales for attractions that violate their animal welfare policy (TripAdvisor 2020). Observational tourism, along with proper elephant management, may offer the best welfare for captive elephants, as they would not have to be under strict control, but the visitors, handlers and property could be kept safe (Kontogeorgopoulos 2009a; Schmidt-Burbach 2017; Bansiddhi *et al* 2020a); thereby, meeting the demands of tourists but not compromising the elephants' welfare.

Conclusion

The results of this study suggest that the affective state of the elephant was an important determinant for participants' willingness to support an elephant attraction and their perceived emotional value from the experience, despite the many misconceptions that participants had about elephants and their welfare. Future research should be directed towards providing targeted education for potential tourists about the welfare concerns involved in elephant tourism. Our work indicates that affective states may be an effective way to communicate welfare concerns with the general

public and that this awareness may increase willingness to support low contact venues; there is therefore potential for tourists' preferences to shift to more observational forms of tourism that may benefit both the welfare of the elephant and safety of the *mahout*.

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