

What messaging factors about the impact of unsustainable Palm oil affect commitment to relevant behaviour change?

Presented by

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Human impact on the planet and the non-human animals that share it is a current and urgent topic, requiring substantial and fast human behaviour change (IPPC, 2018). A contemporary and high profile issue within the environmental science sphere is that of Palm oil and its impact on Indonesian forests and the animals residing there, in particular orangutans.

With the ease of 'sharing' information online, along with the possibility for videos to 'go viral' meaning they are watched often millions of times all around the world (Broxton, et al, 2013), it appears now is a key time to utilise the power of video messaging. The purpose of this study was to ascertain what type of video messaging had the biggest impact on people's future behaviour intentions.

A survey was designed using Qualtrics software. Part way through one of three videos was randomly presented to participants. The videos consisted of two conditions and one control. One condition was viral footage of an orangutan being confronted by a bulldozer in the forests of Borneo, the second was the banned animated Iceland advert, showing the story of 'Rang-tan'. The control video was a perfume advert. Three questions were used to record participant's behaviour change intention in regards to Palm oil consumption, as well as whether or not they engaged with a link to a petition.

Various analysis and statistical tests were run, with a chi-square test of association showing a statistically significant result between video condition and association with 'clicking' on the petition link ($\chi^2(2) = 6.01, p = 0.049$). The main weakness of this study was the number of responses that could be analysed. Further research is required with more participants to truly understand what makes a video message effective at eliciting behaviour change.

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1. Introduction

1.0 Overview of topic

Climate change and animal welfare are intrinsically linked, from population numbers, disease rates and habitat loss, to changes in animal's breeding patterns (Marcogliese, 2008, Kearney, Shine and Porter, 2009, Sunday, Bates and Dulvy, 2012). Deforestation for crops and agriculture is a contributing factor to global warming and a severe animal welfare issue (Nobre and Sellers, 1990), with Palm oil production specifically one of the biggest threats to 193 species of animals deemed vulnerable, endangered or critically endangered (IUCN, 2018), a clear example therefore of a human activity requiring substantial behavioural change in order to reduce its impact on both animals and the planet.

Behaviour change research, particularly on effectiveness of different campaign styles, is well established within the public health sector, for example with smoking or sugar consumption (Brown et al, 2013, Rosenblatt et al, 2019). Within the animal rights, welfare and environmental sphere however, there is less research and often strong reaction and opinion on how best to connect with people. For example campaigns by People for the Ethical Treatment of Animals (PETA), have often been criticised for a lack of intersectionality and objectifying women (Pendergrast, 2018). This consequently provokes a reaction towards the campaign design as opposed to the message, which subsequently becomes diluted. Similarly Patrick Barkham of The Guardian newspaper (2019), wrote about the criticism from the science world of David Attenborough. The impact of humans on non-human animals and the natural world, has been absent from Attenborough's multiple documentaries until recently, with some saying it's potentially too late to make a difference. This scientific criticism is in contrast to the multiple headlines linking a 53% reduction in single use plastic across the UK and US, found by a GlobalWebIndex survey in April 2019 (Bairstow, 2019; Mahmood, 2019), to the television documentary Blue Planet II which Attenborough narrated and which helped propel the phrase 'Attenborough effect' in to the social discourse (McCarthy and Sanchez, 2019; Mahmood, 2019; Bairstow, 2019; Bayley, 2019).

In November 2018 an advert for the supermarket chain Iceland which highlighted the impact Palm oil has on Orangutans (*Pongo*), was banned from television due to its link with Greenpeace. It instead quickly garnered over six million views on YouTube with the ban sparking a media backlash (Sweeny, 2018). The company was using the advert to not only draw attention to the Palm oil industry, but also advertise the removal of the ingredient from all their own brand products. Both the Iceland advert and Blue Planet II

documentary highlight the importance of reporting environmental messages and issues in the way most likely to gain media attention, and the impact that can have whether negative or positive. It is clear that human behaviour requires drastic change to address both the animal and environmental problems faced by the planet, confirmed by the Intergovernmental Panel on Climate Change (IPCC) 2018 report. How best to elicit this change is a critical, urgent and evolving question and yet also understudied. This project aims to add research to the field.

1.1 Human psychology, decision making and behaviour change.

“Human behaviour is the result of the interplay between habit, automatic responses to the immediate and wider environments, conscious choice and calculation, and is located in complex social environments and cultures” (Kelly and Barker, 2016). Behavioural intention is described as the decision to engage or not in a certain behaviour (Ajzen, 1996). Deciding whether to engage in a behaviour is deemed ‘probabilistic’, similarly to making choices between alternatives, so the stronger the intention the more likely the behaviour will be performed or at least attempted. The nucleus accumbens (NAc) is located in the basal forebrain of humans (Willis and Haines, 2018) and is a significant part of the mechanism responsible for differentiating between appropriate and inappropriate behaviour (Lewis, 2013). The NAc is often referred to as ‘the pleasure centre’ of the brain, however Floresco (2015) states that although the region is strongly linked to pleasure it’s much more complex than pleasure alone, and explains it’s more like an ‘interface’ with multiple roles and functions (Fig 1). One prominent role is aiding learning of delayed reward. Cardinal, et al, (2001) studied NAc removal in rats and found their impulsive tendencies became constant, always choosing immediate small rewards over larger delayed ones. The ability to control impulsive behaviour is important when changing behaviour (Carver, 2005). For example, if one is hungry but wants to avoid an ingredient out of principle, strong self-control is required in order to not simply buy the first item seen, but to pick it up, check the ingredients and repeat if necessary.

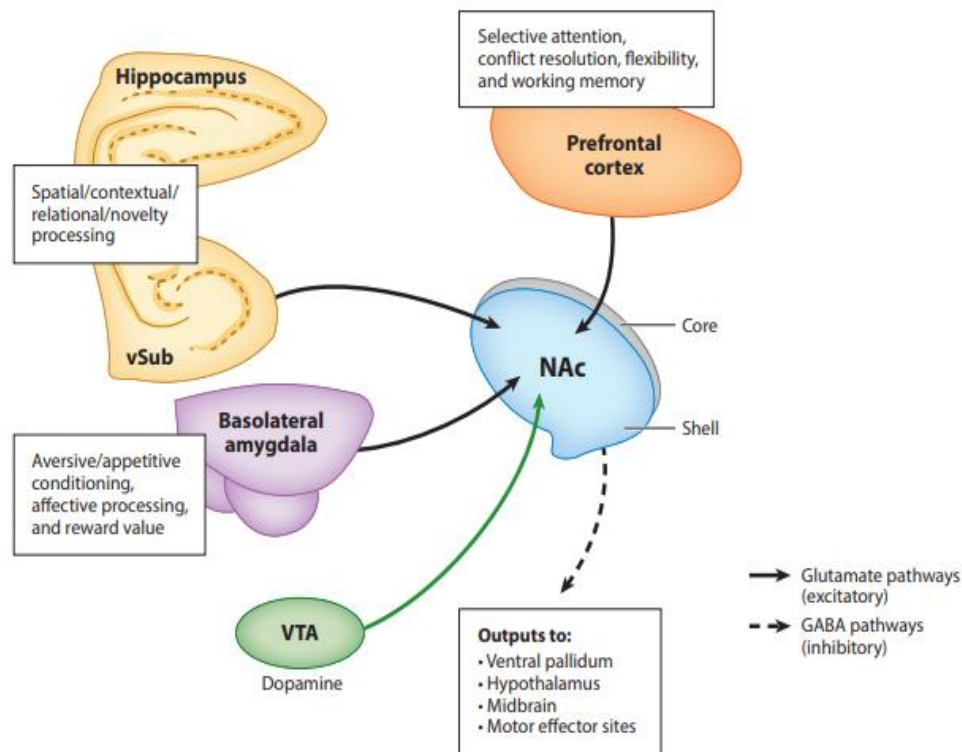


Figure 1. The role of the nucleus accumbens and its relationship to other parts of the human brain. The figure shows what areas of the brain the input signals come from and what roles those areas have, along with listing where the output of the NAc goes (Floresco, 2015).

The Behavioural Insights Team is an organisation formed in 2010 by the UK government that uses behavioural science to help inform policy. This team alongside the conservation organisation Rare published 'Behavior Change For Nature: A Behavioural Science Toolkit for Practitioners' in April 2019. The report highlights the need to make behaviour change a separate focus from awareness, attitudes or intentions. This is based on the findings of Diekmann and Preisendörfer (2003) that awareness will lead to adoption of an easy behaviour, but when it comes to change that requires compromise on money, convenience or enjoyment, awareness alone will not elicit new behaviour and more is required. Moser and Kleinhüchelkotten (2017) provided further support to this idea, when they found that even people who identified as pro-environmentally friendly tried to reduce their energy consumption and emission of greenhouse gasses, their actions and behaviours remained low impact. The Behavioural Insights Team advise that to achieve successful behaviour change four principles should be adhered to (Table 1). They state these principles have been effective in their campaigns and work. The overarching theme of the framework is to take responsibility and effort away from the individual, so that the action required from them is minimal or even gone completely. For example the decision to make pension enrolment automatic came from the Behavioural Insights Team, and lead to a 22% increase in pensions (Behavioural insights team, 2014). This method has

proven so successful that it's now being implemented with organ donation in the UK (NHS, 2020).

Table 1. The behavioural insights team's four principles for effective behaviour change. It is known as the EAST (Easy, Attractive, Social, Timely) framework (2014).

Principle	Explanation
Easy	<ul style="list-style-type: none"> • Defaults: humans usually go with the default setting due to the ease of it. • Effort: reduce the effort required by an individual and a behaviour or action is much more likely to be taken up or done. • Simple messaging: making the message simple and clear increases uptake and response.
Attractive	<ul style="list-style-type: none"> • Attention: make the message attention grabbing by using colour, image or personalisation. • Consequences: using rewards or sanctions are effective at increasing engagement. Financial incentives are particularly successful as are personal sanctions such as highlighting 'wrong' behaviour.
Social	<ul style="list-style-type: none"> • Networks and 'peer pressure': showing evidence that most people are doing the 'right' or 'desired' behaviour has a strong effect on people, as does encouraging people to make commitments to others.
Timely	<ul style="list-style-type: none"> • Doing things at the right time: for example prompting people when they are most likely to be receptive, using the power of immediate costs and benefits which often has a strong influence on people and enable people to plan their response to events.

The value-action gap is one theory that aims to explain the disconnect between intent and behaviour change (Table 2). Based on research it's evident that the issue of intentions and actions not corresponding is widespread and human, as opposed to individual and societal. Studies from, Australia, Britain, Canada and Hong Kong have all shown that ultimately convenience will triumph over sustainable actions, no matter the positive intention (Wait and Harada, 2012; Flynn, Bellaby and Ricci, 2009; Kennedy et al, 2009; Chung and Leung, 2007).

Table 2. Rajecki's four explanations for the value-action gap (1982).

Reason	Explanation
Direct versus indirect experience	Direct experiences (eg. witnessing or being personally affected by something) have a stronger influence on people's behaviour than indirect experiences (eg. reading an article).
Normative influences	Social norms, culture and tradition, environment, peer pressure and family habits all influence the gap between someone's attitudes and actions.
Temporal discrepancy	The idea that time affects attitudes.
Attitude behaviour measurement	This refers to the difference in scope of how attitude is measured, compared to actions. For example: Do you care about animals? (attitude) and Do you eat meat? (actions).

Nisbet and Glick addressed the crossover between human health and climate change in their 2008 review. They question why the psychological techniques used when tackling health behaviour changes are not used when trying to change environmental actions, especially as the psychological reasoning humans use to justify negative conduct is the same for both. They also highlight the impact external factors such as socioeconomic status and infrastructure, have on people's actions. For example If public transport is not easily accessible it's more convenient for someone to drive, equally those for whom money is an issue expensive 'green alternatives' will not be attractive (McKenzie-Mohr et al, 1995).

1.2 Campaign techniques and effectiveness

The public health sector is an area where campaigns are often run to promote adoption of 'good' health behaviours (Wakefield, Loken and Hornik, 2010). Brown, et al (2013) reviewed the effectiveness of the smoking cessation campaign 'Stoptober' which was launched in 2012 in the United Kingdom. The campaign used the psychological techniques of social contagion, 'SMART' goals and PRIME theory (Table 3) to maximise effectiveness of the campaign.

Table 3. The definition of the three psychological techniques employed in the ‘Stoptober’ smoking cessation campaign.

Technique	Definition
Social cognition	A term used to explain the impact the immediate social environment has on human thoughts and social behaviour (Cardwell, 2010).
SMART goals: Specific, Measurable, Attainable, Realistic, Timely	A well-known and understood method of goal setting developed in the 1950s that has been shown to be successful with student (Lawlor and Hornyak, 2012).
PRIME theory: Plans, Responses, Impulses, Motives, Evaluations	A theory that combines both conscious choices and non-conscious motivational systems along with classical and operant conditioning (Ogden, 2012).

The national aspect of the Stoptober campaign was outlined as ‘key’ by Brown, et al (2013). It created a social group and turned the behaviour change in to a ‘movement’, generating peer pressure to succeed which has been shown to reduce the inclination of ‘giving up’ quickly (Buechel, Mechtenberg and Petersen, 2018). It could be argued that Iceland attempted to use social cognition when creating their Palm oil campaign. By giving the cartoon orangutan a name ‘Rang-tan’, making them a baby and employing highly respected and recognisable British actress Emma Thompson to voice her, the company attempted to turn Rang-tan in to a symbol and figurehead for the cause and create a social communication around her, even deploying animatronic orangutans to walk the streets of London in November 2016 (Fishwick, 2018).

The banned Iceland advert used egomorphism, the concept that an animal is perceived to have human qualities and a sense of self naturally, which helps elicits empathy and is established marketing tool (Root-Bernstein, et al, 2013). This tool is often used in conjunction with a ‘flagship’ species, a species often described as high profile, charismatic and vulnerable and therefore able to rouse support from the majority of the public (Jepson and Barua, 2015). Based on this description orangutans ‘fit the bill’ and when utilised effectively this tool can lead to great success in rehabilitation of a species, for example the perception of Komodo Dragons amongst Komodo island locals (Supriatna, et al, 2014). Several conservation organisations, such as Conservation International and Greenpeace have attempted to create engagement from people at a local and international level with the plight of orangutans with various levels of success (Supriatna, et al, 2014; Jepson and Barua, 2015).

Rosenblatt, et al (2019) investigated the effect of health warning labelling and found that the more graphic an image is the more effective at promoting individual health behaviour change, especially when combined with negative text. This supports the research of

Nisbet and Gick (2008) who established both health and environmental behaviour change utilises the same area of the brain. Text warnings alone were not powerful enough to produce a strong response (Rosenblatt, et al, 2019) reinforcing the idea that knowledge alone will not change behaviour (Diekmann and Preisendörfer, 2003). This research indicates that a more graphic approach to environmental behaviour change, could be an effective strategy for future campaigns.

1.3 Palm oil the product

Malaysia and Indonesia are responsible for over 80% of all Palm oil produced globally, in conjunction with being home to over 80% of Southeast Asia's surviving primary forests (Fitzherbert, et al., 2008). Palm oil has many advantages over other vegetable oils, most notably its efficiency, with a yield that outstrips its competitors (Fig.2) as well as the cost to grow the tree initially (WWF, 2018).



Figure 2. The global oil yield of different crops in tonnes per hectare (t/ha). Palm oil undisputedly outstrips the other oils. The biggest difference is with soy crops where palm produces more than 8 times the amount of oil. The other common crops shown are Coconut, Sunflower and Rapeseed where palm oil produces nearly 5 times the amount of oil (WWF, 2018).

The issue with palm oil is the method in which global demand has been and is continuing to be met, rather than the oil itself (Pirker et al, 2016). Rampant deforestation and draining and conversion of peatland is contributing vast amounts of carbon dioxide (CO₂) in to the atmosphere (Carlson et al, 2012; Miettinen et al, 2012). Alongside CO₂ emissions, these actions directly impact multiple species of animals leading to many being declared critically endangered, most notably the Sumatran (*Pongo abelii*) and Bornean (*Pongo pygmaeusII*) orangutans but also Pygmy elephants (*Elephas maximus borneensis*) and Sumatran rhinos (*Dicerorhinus sumatrensis*) amongst others (WWF, 2018).

Palm oil is not just produced for human consumption, biofuel is a substantial sector of the industry and set to increase significantly due to the need to move away from fossil fuels (Corley, 2009). Efforts to modify the industry and bring about a sustainable method for farming Palm oil have been introduced at a global level with the Roundtable on Sustainable Palm Oil (RSPO), European and American initiatives as well as the

Sustainable Oil Palm Manifesto between five major palm oil growers (Pirker, 2016). These efforts although noble are fraught with issues and have failed to take over the Palm oil market, with only 19% of global Palm oil RSPO certified (RSPO, 2020). Concerns have been raised over the effectiveness of the RSPO as an organisation, with RSPO certified plantations having been found to have significant deforestation, in some cases no less than uncertified plantations (Gattil, et al, 2019).

1.4 Palm oil and orangutans

On the RSPO's list of priorities it is the seventh and final one that is about protecting the environment and eco systems (Fig.3), and even then it does not state explicitly a requirement to protect Orangutans. It's believed that Bornean and Sumatran orangutans will be the first of the Great Apes to become extinct due to human activity (Taylor, Miller and McBurnie, 2016), and over 100,000 are estimated to have been lost to habitat destruction and a lesser extent hunting between 1999-2015 in Borneo alone (Voight, et al, 2018).



Figure 3. The RSPOs principles and criteria set out in 2018. The organisation states that it is these principles that should underpin all business and activity carried out by its members.

Orangutan means 'person of the forest' in Malay and Indonesian (Matsuzawa, 2015) and considering they move, eat and sleep in trees (Larter, 2015) it is clear forests are vital for their survival. Like other primates orangutans are subjected to the illegal pet trade, and for orangutans it often goes hand in hand with deforestation (Freund, Rahman and Knott, 2016). Similar to how infant chimps are seen as a 'by-product' of the bushmeat trade, infant orangutans are often treated the same way when their mothers are killed as a result of deforestation. A female orangutan may only have 4-5 offspring in her lifetime and each infant will depend on her for at least 10 years (Larter, 2015), this slow rate of

reproduction means the species can't replace those lost to the threats they face and subsequently they're likely to become extinct in the wild if things continue as they are.

1.5 Methodology

Surveys and questionnaires are a well-recognised mode of data collection (Ilieva, Baron and Healey, 2002). The move away from face to face, telephone and postal surveys to email and online began in the 1980s, and continued to expand throughout the 1990s (Schonlau et al, 2001). By 2006 it was estimated that spending on online research in Europe reached £383,000,000 (Twyman, 2008). A common reason for the use of postal surveys was the cost being relatively low and the ability to reach a wide amount of people (Blumberg, Fuller and Hare, 1974), however online surveys now fulfil this criteria and also enable faster responses (Wright, 2005).

Evans and Mathur (2005) analysed both the strengths and weaknesses of online surveys (Fig. 4) and highlighted the issues 'perception as junk mail', 'unclear answering instructions' and crucially 'low response rate' as the main flaws. Web survey response rate is on average 10% lower than other survey methods (Fan and Yan, 2010). Fan and Yan (2010) identified in four key areas of surveys; presentation, content, sampling and contact method and ease of submitting, and weakness in any of these areas will affect response rate.

While Fan and Yan (2010) identify that online survey design is crucial and problems with it can lead to issues including low response rate, Liu and Wronski (2017) investigate low response rate in more detail. They found a statistically significant ($p < .001$) relationship between survey length and low response rate with the longer the survey the lower the responses., Open ended, longer and more complex questions that require effort and higher levels of comprehension are usually associated with higher drop out (Liu and Wronski, 2017). This supports Diekmann and Preisendörfer's 2003 study that any behaviour requiring a compromise on pleasure, money or time is unlikely to be successful.

Using video messaging as opposed to still images or slogans, taps in to the current trend in media consumption, capitalises on the ease of online 'sharing' of information and exploits the potential for videos to go 'viral' (Broxton, et al, 2013). So called 'viral videos' are often short in length, gain traction and widespread attention quickly and fade from popularity just as fast. The power of online video messaging to affect people's decisions has been utilised by politicians for over a decade, for example in 2008 the pro Obama video "Yes we can" accumulated over 10 million views on YouTube (Broxton, et al, 2013). Rodrigue, et al, (2014) studied the impact video messaging had on people's willingness

to sign up for organ donation, and found even a one minute video if using the right images had a significant influence on people’s emotional valence, appeal of organ donation and readiness to click on to organ donation website. Rodrigue, et al, (2014) found a child patient who had received an organ and consequently survived, yielded the most favourable responses and hypothesised this could be to do with the framing of this message being ‘gain-framed’ rather than loss framed. These findings are supported by Rosenblatt, et al (2019) that discovered positively framed health messages produced a stronger motivational desire to change behaviour.

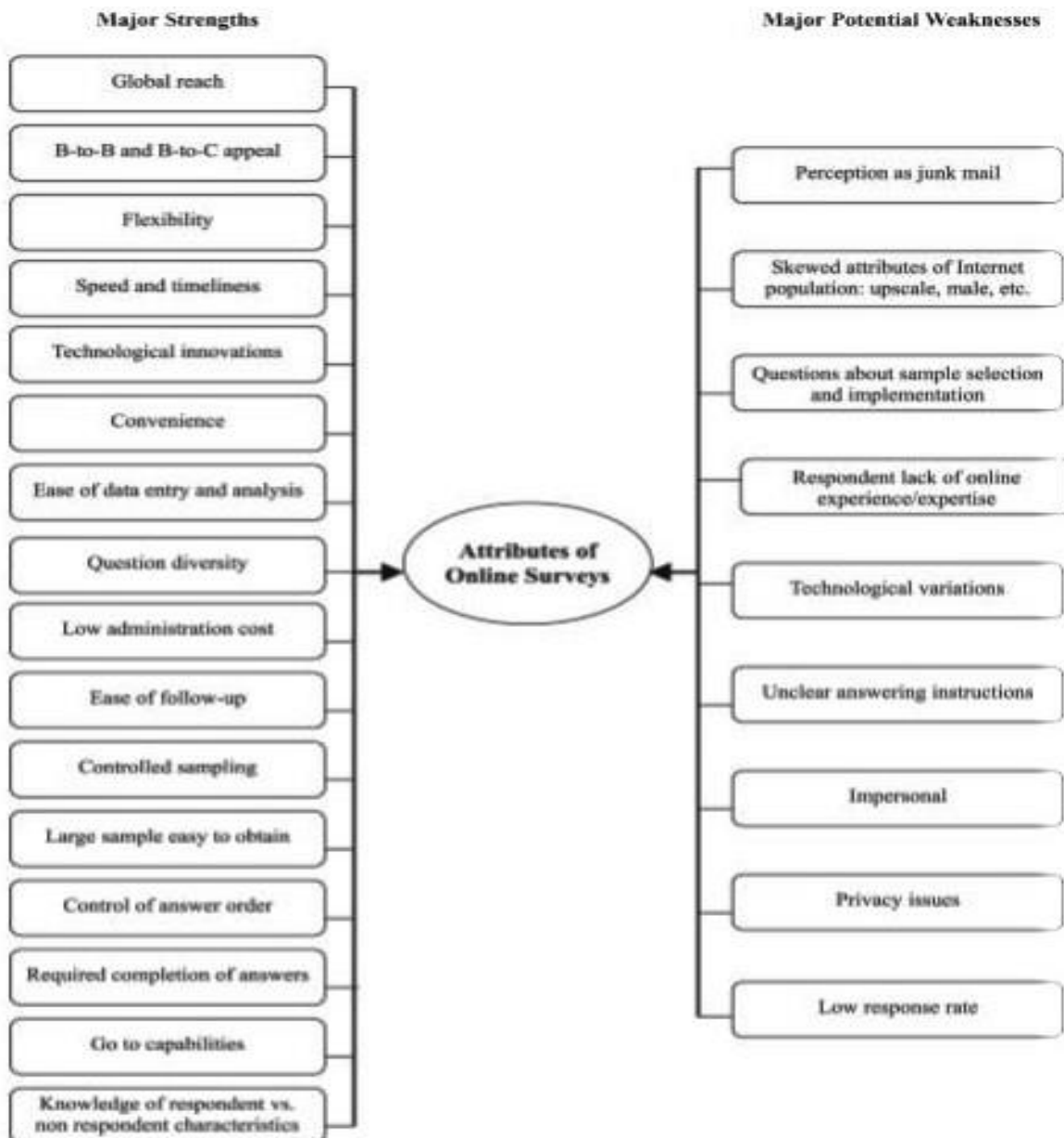


Figure 4. The main strengths and weaknesses of online surveys identified by Evans and Mathur in their 2005 review. Although there are more strengths than weaknesses, some of the weaknesses highlighted can have a severe impact on results, such as low response rate.

1.6 Hypothesis

Both video conditions, real footage (graphic) and animation (non-graphic) will have more impact than the control footage on participant's future behaviour intention score and clicks on petition link, and the real footage will have a stronger impact than the animation.

1.7 Null hypothesis

Neither video condition, real footage (graphic) or animation (non-graphic) will have more impact than the control video on participant's future behaviour intention score and clicks on petition link, and there will be no difference between video conditions.

2. Method

2.1 Ethics statement

This study was approved by the ethics committee at Plumpton College.

2.2 Materials

The survey was built and shared using Qualtrics software and responses were recorded and stored by Qualtrics also. The survey was split in to 8 sections (Table 4), and three videos were selected to be the conditions. A 'randomizer' was manually added to the survey when it was designed, which meant the video that was presented to each participant was randomly allocated. Timers were added to each video condition page and the petition link page to record how long participants spent on each page.

The videos were decided on based on several factors. Both the Iceland advert and the 'graphic' video of an orangutan 'fighting' a bull dozer can be called 'viral videos' with over 6 and 1 million views on YouTube respectively (YouTube.com, n.d). These views are on the original sources excluding all secondary sources and not including social sites such as Facebook or Instagram. Both the 'viral' videos also made the news in a range of outlets including The Sun, Sky and The BBC amongst others (thesun.co.uk, 2018; news.sky.com, 2018; bbc.co.uk, 2018). The second factor considered was length of video, the Iceland advert was complete and ran at 1 minute 32 seconds so videos had to be found that matched this. Using the 'Unilad' version of the bulldozer video meant it was 1 minute 21 seconds as opposed to the original 2.06 (YouTube.com, 2018), and had information about unsustainable palm oil shown throughout, meaning it became similar in style to the Iceland advert which informs about unsustainable Palm oil. The main focus of the 'control' video was ensuring the length matched the two conditions and was as neutral and unemotional as possible whilst still being interesting enough to hold attention. The video chosen was a perfume advert for Lacoste, there is no dialogue and one simple story to follow and it lasts 1 minute 30 seconds.

Table 4. Breakdown of survey by theme. Questions were a mix of tick box and likert scale. There were 22 questions that were marked 'Force Response' (FR) meaning a participant couldn't progress further without answering the question. 13 FR questions were in the demographic and lifestyle section, 4 were in Palm oil knowledge before video, 2 were in Palm oil knowledge and opinion after video and 3 were the behaviour intention measures.

Section theme	Order in survey	No. of questions	Key questions in each section
Demographic and lifestyle	1	18	- Age, - Gender - Nationality
Ethics and beliefs	2	4	- Do you think animals should have the same rights as humans - How worried about climate change are you?
Palm oil knowledge	3	4	- What is it? Where did you hear about it? -What animals are affected? -What products is it in?
Video condition (randomly assigned)	4	0	n/a
Palm oil knowledge and opinions on it.	5	6	-What does RSPO stand for? -Why is it used? - Opinion on whether palm oil labelled on products -Opinion on banning palm oil -Opinion on supporting sustainable palm oil.
Behaviour intention questions.	6	3	-Check for Palm oil? -Abstain from buying Palm oil? -Purchase RSPO Palm oil only?
Petition link.	7	0	n/a
Submission	8	0	n/a

The behaviour intention questions were specifically worded to test what level of effort participants would be prepared to exert going forward in regards to Palm oil purchasing, whilst the petition link aimed to test impact of video condition. Even the participants who were shown the control video had been asked about Palm oil in the knowledge questions, for which the possible answers and tick boxes should have indicated the far reaching impact of the ingredient, for example the number of products that it is used in and the number of animal species it affects. The very basic level of effort is tested by the first of the questions, "How likely is it that you would check specifically for Palm oil or Palm oil derivative ingredient?" and the options were, extremely unlikely; somewhat unlikely; somewhat likely and finally extremely likely. These options remained the same for all questions. The second question tested effort further and could be seen by some as 'extreme' as it asked, "How likely is it that you would abstain from buying a product that contained Palm oil or a Palm oil derivative?" Finally the third question aimed to be a combination of the first two, with an 'extremely likely' response indicating more effort

than the first question, but less behaviour change than indicated by the second question as it asked, “How likely is it you will only purchase items that have RSPO certified Palm oil in them going forward?”. Answering extremely likely to all three of the questions indicates a strong intention to change behaviour going forward.

2.3 Distribution

The survey link produced by Qualtrics was shared by the investigator to personal acquaintances via Facebook, Whatsapp, and email, as well on nextdoor.co.uk and the Brighton University alumni network.

2.4 Data Analysis

All responses were recorded and stored by Qualtrics. The data was downloaded as a Microsoft Excel document and saved by the investigator on a personal password protected laptop.

In order to be able to assume the video had some impact on participants and the message was understood, a minimum time spent on the video page was decided upon and used as criteria for analysis. Forty seconds was decided as the baseline as it was 50% of the shortest video. The video calculation was the first way in which the responses were sorted, and was done by subtracting the first click timing from the page submit timing. Secondly survey completion percentages were checked, with particular interest paid to the behavioural intent questions.

Once ‘useable’ responses were confirmed knowledge and future behaviour intent scores were determined. The knowledge scores were calculated by counting the number of correct answers for the questions of products that contain Palm oil, animals affected by Palm oil and the reason Palm oil is used. The behaviour intent score was calculated by assigning values to the likert scale ‘measurement’ questions (Table 5) of how often will you check for Palm oil, abstain from Palm oil and only buy RSPO certified products. These overall scores could then be used for analysis.

Statistical software Genstat (19th edition) was used for analysis. A chi square test of association was run testing the association between video condition and clicks on petition. A two-way Analysis of Variance test (ANOVA) was done testing the relationship between age, gender and behavioural intent score, and two T-tests were completed examining the impact of age and gender on petition link clicks.

Table 5. The likert scale options for participants to choose from for the three behavioural intent questions asked at the end of survey, after the video and the scores assigned to them by the investigator. The higher the behaviour intent score the more likely a participant's intent to change their behaviour going forward.

Likert scale answer options	Score given by investigator
Extremely unlikely	1
Somewhat unlikely	2
Somewhat likely	3
Extremely likely	4

3. Results

There were 200 survey responses recorded but only 69 suitable for analysis, most participants were in their thirties (Fig 5) and there was a gender split of 60.5% female and 32% male. The other 7.5% was made up of participants who left the box blank, chose to self-describe but did not add a description or chose the option of 'prefer not to say'.

The 69 'useable' responses were believed to have watched the video presented to them for at least 40 seconds as well as have fully completed surveys. There were 67 responses that were fully completed and correctly submitted, but where the video shown had not been watched for the minimum time. Overall there were more unusable responses than useable ones (Table 6), with useable responses representing just over a quarter of all responses (Fig 6).

A chi-square test of association showed a statistically significant association, between the video condition participants were exposed to, and whether or not they reviewed the petition at the end of the survey via the link provided ($\chi^2 (2) = 6.01, p = 0.049$; see Table 7 and Fig.7). Cramer's coefficient (V) was calculated as 0.226 showing a low association.

The impact of the video condition seen and subsequent behaviour intention score was calculated as percentages to demonstrate the impact of each video, as count alone would not show affect fairly due to the unequal participant numbers for each condition (Table 8).

A two-way ANOVA was run testing the impact of age and gender on future behaviour intent score, and no statistically significant result was found for gender ($F (1,17) = 2.41, p = 0.139$) or age ($F (39,17) = 1.49, p = 0.190$). No statistically significant interaction between age and gender on future behaviour intent score was identified either ($F (10,17) = 0.45, p = 0.903$). A second two-way ANOVA was conducted testing the effect of gender and age on petition link clicks. No statistically significant result was found for gender ($F (35,13) = 0.68, p = 0.824$), or age ($F (1,13) = 0.18, p = 0.68$), and no statistically significant interaction was found between age and gender on petition clicks either ($F (8,13) = 1.42, p = 0.277$).

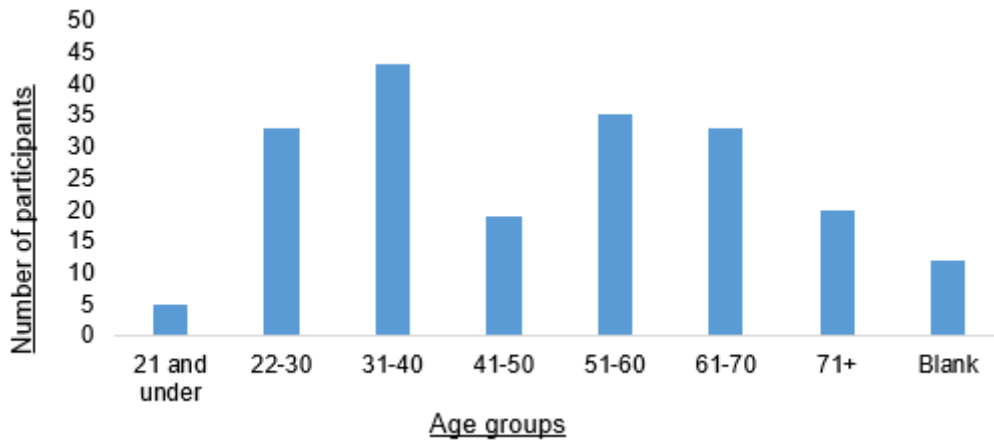


Figure 5. Graph showing the breakdown of ages of all 200 participants. Most participants were in their thirties, the second highest group was fifties, closely followed by those in their 60s. The lowest group is those who are 21 and under, however this group only allows for four different ages as participants had to be 18 to take part.

Table 6. All 200 survey responses broken down in to categories for either analysis or not. Criteria for analysis was based on length of time watching the video condition and survey completion percentage. Submission wasn't necessary as Qualtrics stored all responses whether 'submitted' or not. The videos were all 90 seconds long, and 40 seconds was decided as the minimum time acceptable for a participant to take in the message.

Action taken by respondent	No. of responses	Useable Y / N
<ul style="list-style-type: none"> • Video watched ≥ 40 secs. • Survey fully completed. • Survey submitted correctly. 	56	Y
<ul style="list-style-type: none"> • Video watched ≥ 40 secs. • Survey fully completed. • Not submitted. 	13	Y
<ul style="list-style-type: none"> • Video watched < 40 secs. • Survey fully completed. • Survey submitted correctly. 	67	N
<ul style="list-style-type: none"> • Video watched < 40 secs. • Survey not fully completed. • Survey not submitted. 	64	N

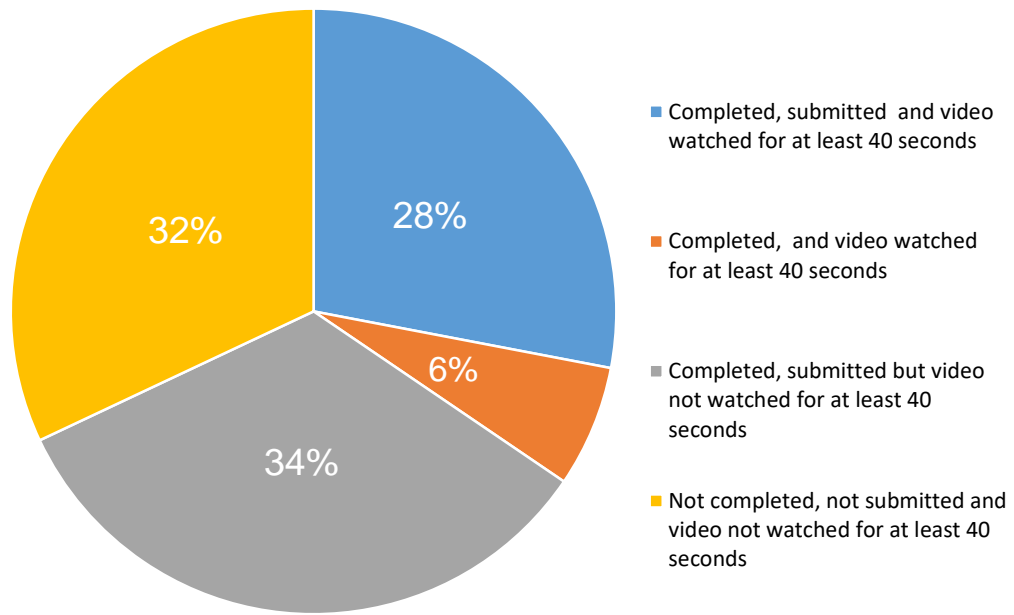


Figure 6. Chart showing the content of table 6 as percentages. The blue and orange sections combined are the total responses received that were able to be analysed and equal 34%, the same percentage as those that were unable to be used due to lack of time spent watching the video. It is clear to see the majority of responses received (grey section) were fully completed and submitted and yet unable to be analysed due only to lack of time spent watching the video condition presented.

Table 7. Frequency of petition clicks and the video condition that was shown to each participant. Most participants who clicked on the petition had been shown the control video condition. There were 69 responses suitable for all analysis, but only 59 that had petition click data, 10 responses were missing this information. It is assumed that these people simply closed the survey at the petition page and did not progress further to either click past the link, click on the link or submit the survey. Expected frequencies are shown in brackets.

		Condition			Total
		Graphic	Non-graphic	Control	
Petition link clicked	Yes	4 (8.1)	10 (9.0)	14 (10.9)	28
	No	13 (8.9)	9 (10.0)	9 (12.1)	31
Total		17	19	23	59

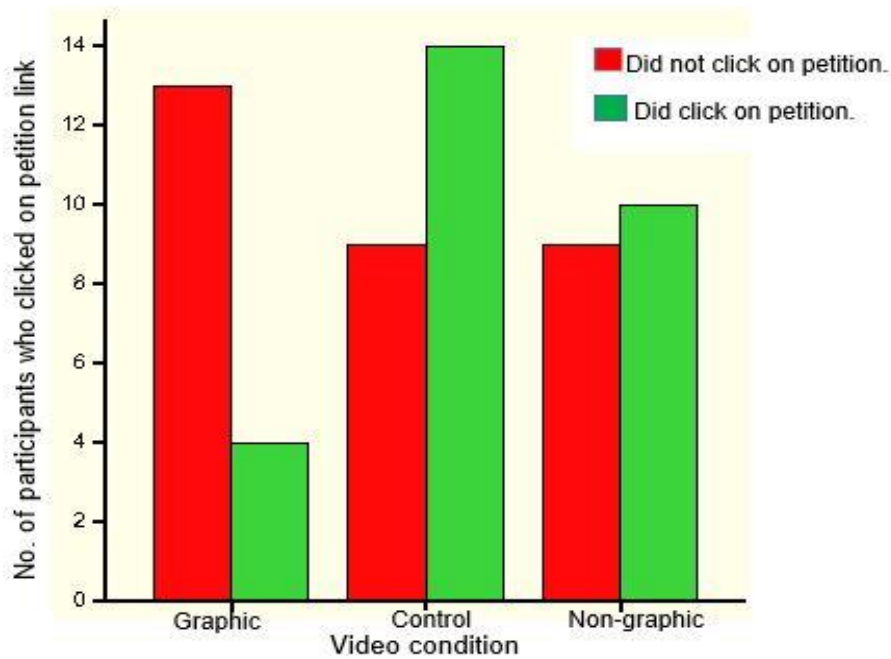


Figure 7. Graph showing the frequency of petition clicks by video condition presented to each participant. Most people who were shown the control video which had nothing to do with Palm oil, went on to click on the petition link and most people shown the graphic video condition chose to not click on the petition link but to progress past the page instead. Data was obtained from Qualtrics which recorded both time spent on page and clicks on page. This data is for 59 of the 69 responses suitable for analysis. 10 of the 69 responses had no petition data recorded, as most likely exited the survey at the petition page rather than clicking on the link, or clicking through to the final page.

Table 8. Future behaviour intention scores for the 69 useable responses, broken down by video condition seen and grouped by strength of intention. Due to the unequal number of participants for each video condition (graphic = 18; non-graphic = 22; control = 29) the count for each condition is also shown as a percentage of the total number of participants for each condition. Percentages were deemed a more accurate way to compare impact of each video on participant's future intentions. Results show control and graphic video had a very similar impact on participants when shown as percentages, with the non-graphic video having the strongest influence on participants future behaviour intentions.

		Low intent score 1-4	Medium intent score 5-8	High intent score 9-12
Graphic	Count	2	9	7
	Count as % of total for video	11.1	50.0	38.9
Non-graphic	Count	1	8	13
	Count as % of total for video	4.5	36.4	59.1
Control	Count	3	14	12
	Count as % of total for video	10.3	48.3	41.4

4. Discussion and conclusion

4.1 Response rate and responses

When comparing this study to others, such as the 2019 Rosenblatt, et al, research, two hundred responses is a satisfactory number considering the mode of distribution, and the fact there was no incentive, something previously shown to increase uptake (Bosnjak and Tuten, 2003; Deutskens, et al, 2004). As the question posed by this project is that of what impact video messaging has on behaviour, it was deemed important by the investigator to set a minimum amount of time for people to watch the video they were presented with, and yet the main drawback with this research is the 67 responses that had to be discarded from analysis due to not meeting the minimum time. Other studies that have looked at the impact of video messaging also took steps to ensure participants watched the videos. Rodrigue, et al, (2014) for example used a neutral video as a 'validity check', a question asking if there were any issues with the video quality and did not allow respondents to 'skip' through videos.

The 69 'useable' responses works out to a success rate of 34.5%, meaning 290 total responses would have been required to result in 100 suitable submissions. 100 was the aim of the investigator in order to be in line with Rosenblatt, et al, (2019), who's valid responses were 100 but had had an overall response of 381 giving a completion rate of 26.2%. Although other surveys regarding environmental issues, such as Kirwy and Mecking's 2011 research in to environmental and health consciousness, resulted in over 500 suitable responses, it had started at over 1000 participants and highlights the common theme with surveys of low response rate, even with an initially high number of potential participants. The survey was purposefully not shared to environmental or animal welfare groups on Facebook, in order to not skew the results with those who potentially already knew about Palm oil and were maybe familiar with both video conditions. The mode of distribution was intended to give a broad cross section of people and it was hoped it would be shared widely via social media. This was partly successful in terms of reach of the survey, with 9 countries and 10 nationalities represented within the 200 overall responses (see Appendix 2). The disadvantage of this method compared to having a pool of potential participants to draw from means devices such as pre-notification or reminder messages cannot be sent, a technique that if employed can help yield higher response rates (Fan and Yan, 2010). The use of the Brighton University alumni network was helpful, but without a question asking participants how they encountered the survey it is not possible to quantify how many responses it generated.

4.2 Effect of video condition and impact of video message

The hypothesis was proved partly true as a statistically significant association was found between video condition and engagement with petition, and the graphic video did have the biggest impact (Fig.7), but it was negative rather than positive, with only 4 out of the 17 respondents shown the footage clicking on the petition link. Leon Festinger developed the concept of cognitive dissonance in the 1950s (Harmon-Jones and Harmon-Jones, 2007), and it's possible that it was what affected people's decision to not further engage in the topic by looking at the petition provided. Cognitive dissonance is "the mental conflict that occurs when beliefs or assumptions are contradicted by new information" (Encyclopedia Britannica, 2019). It could be that seeing the direct human impact of Palm oil plantations on orangutans, which is what the graphic video shows, made participants "pre-empt dissonance by avoiding or postponing engagement with an issue" (Prunty and Apple, 2013) in this case by avoiding the petition, perhaps so as not to be confronted with more images of suffering orangutans.

In contrast to the graphic video the control video had a positive influence on people's desire to view the petition with just under 61% of those who viewed the video going on to click the link, possibly because having been introduced to the topic but not given any substantial information on it made people curious enough to want to find out more. The animation video had nearly equal numbers of people wanting and not wanting to find out more (Fig.7). These results indicate, either a strong message presented in a subtle way or teasing information is most likely to lead to some effort or action, and certainly teaser campaigns have proved successful a marketing tool for brands (Trehan and Maan, 2012). Employing a similar approach could be a useful for environmental and animal welfare charities, initiatives and agendas, as a strength of this type of media is in generating discussion at "all levels in the communication pyramid" from family units and friendship groups, to wider social gatherings and the online world (Trehan and Maan, 2012). This type of communication and connection overlaps with social contagion, a theory already identified as vital in effecting behaviour change (Brown, et al, 2013).

Table 8 suggests the subtle technique of the non-graphic video is effective at generating intention to change future behaviour. Interestingly the graphic video was less effective overall, although provoked a strong reaction in six of the 18 participants shown it, who went on to score either 11 or 12 indicating a strong desire to change (see Appendix 3). Certainly strong footage has been shown to have a significant impact on intentions and empathy in previous similar studies, such as Shelton and Rogers's 1981 research on the impact of whaling footage and participant's intentions to help with Greenpeace's anti-whaling campaigns. Shelton and Roger (1981) found those shown highly noxious

footage of whaling were prepared to give up their time to address envelopes for a 'save the whales' campaign.

4.3 Influence of gender and age

Neither gender nor age had a statistically significant impact on petition click nor behaviour intent score. Fan and Yan (2010) reviewed data from multiple surveys and identified that personality has a strong impact on participation and completion of web surveys, seemingly more so than age or gender. Fan and Yan (2010) concluded those more conscientious and open to experiences most likely to participate in surveys, and people with a high emotional stability more likely to complete a survey once started.

4.4 Issues and future considerations

Survey length is often cited as a key factor in response rate with longer surveys leading to lower response rates (Fan and Yan, 2010; Liu and Wronski, 2017). With over 30 questions plus the added requirement of watching a video, all of which was stated as part of the consent form at the beginning of the survey (Fig. 8), it's likely survey length played a part in the 64 responses that were not fully completed and did not progress to the video condition, 38 participants dropped out with under 50% completed (see Appendix 2).

This questionnaire is about effectiveness of different types of video and how this relates to behavioural intentions and action. The questionnaire has 36 questions and should take no longer than 15 minutes to complete.

A publicly available video lasting no longer than 1 minute 31 seconds is required to be watched part way through. If you are completing this on a smart phone, please note you may have to rotate your screen to watch the video effectively. There are two potential risks for this questionnaire, firstly the video may contain scenes that some people find distressing. Secondly there is a risk of survey fatigue, however the survey should be quick to complete and you can take breaks or withdraw from the survey at any time.

There are no direct incentives for completing the questionnaire, however you will be contributing to scientific research.

By ticking the box below I confirm I am aged 18 or older and I consent to completing the following questionnaire and having my responses analysed. I understand the information is completely confidential.

Figure 8. The wording shown to respondents at the beginning of the survey. The first sentence explains the purpose of study, explicitly stating it is about the effectiveness of different types of video. The length of the video required to be watched is stated. A tick box which had to be checked to progress was put underneath this, stating that the respondent was over 18 and consented to their data being analysed.

The major frustration of this study was the 67 respondents that completed and submitted the survey, but did not watch the video condition presented to them for at least 40 seconds and therefore did not have their data included. No confirmation question was included following the video condition, so the investigator can only speculate on why respondents chose to watch less than 40 seconds of the video presented to them. Although the videos used were chosen because they were 'viral' and publicly available it could've been this very factor that made people stop watching early. Perhaps if they had already seen the video they were presented with, they felt they knew the message it was presenting and didn't feel they 'needed' to watch it. The graphic video had the least number of completed responses (see Appendix 3), potentially people became 'distressed' by the footage and chose to stop watching it, which the consent form indicated was OK to do. Therefore if carried out again the consent form wording could be changed to stress the importance to the research of watching the video presented for the full duration. Other solutions could have been to 'force response' on the video condition page by adding a question confirming the respondent had watched their video. Changing the placement of the video may also lead to better results, making it the first part of the survey like in Rodrigue, et al, (2014) means participants are presented with it when motivation is at its highest (Liu and Wronski, 2017). Of course a change like this would mean removing the Palm oil knowledge questions due to the information contained within the videos. This in turn would reduce survey length likely leading to more responses.

The Palm oil knowledge scores did not appear to have as much impact on respondents intention scores as video condition presented, for example the participant with the highest knowledge score (21) was shown the control video and had a medium intention score (5) and did not click on the petition link (see Appendix 3). Similarly a respondent who had a zero (0) knowledge score was also shown the control video, had an intention score of 8 and did click on the petition link (see Appendix 3). With this in mind, removing the knowledge questions and focusing more on video impact is something the investigator would change if the research was to be carried out again.

4.5 Conclusion

Video messaging will only continue to grow as social media use increases, and similarly to how business are now actively researching how best to utilise its power (Hanna, Rohm and Crittenden, 2011) it seems logical for animal welfare and environmental organisations to do the same. In conjunction with increased internet usage online surveys have a place in data acquirement.

This study although only producing one statistically significant result, has added to the research area, and importantly the statistically significant result was in relation to type of video and likelihood to seek further information on the topic. The fact that based on these results it seems the more graphic and explicit the message, the less likely people are to engage is useful for future campaign design. These findings support the research around how PETA's campaigns are often deemed 'controversial' and provoke reaction sometimes to the detriment of the actual message (Pendergrast, 2018), and seem to suggest that anything too overt that 'challenges' can in fact turn people 'off' from what is trying to be communicated. This was found in the health and wellbeing sector when testing people's reactions to health related messages around obesity implications (Puhl, Peterson and Luedicke, 2012) It would seem the more 'palatable' a message can be made the more likely it is to instigate action or at least minimal effort. It is important to remember however the power of empathy to engage (Shelton and Roger, 1981).

Further research is required in order to find the exact combination, of information, emotional valence and presentation that is required to both invigorate and energise people. Humans need enough information to not only take seriously the threats that in this case orangutans, but many other animals also face, including humans, but also sufficient belief that their behaviour change is part of a wider movement and will make a significant difference to the planet and its inhabitants.

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