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Factors Affecting Attitudes and Consumer Behaviour in the Case of Animal-Tested Products

By

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Abstract

In recent years, an increase in demand for ethical products has been well-documented, with clear implications for companies which need to adapt their production and marketing activities to reflect this shift in consumers' buying behaviour. To do so successfully, they must be well attuned to which consumer groups are more or less likely to be driving this shift in demand. This study utilises a survey carried out among a sample of University of Malta students, in order to identify which factors affect attitudes and consumer behaviour in the case of animal-tested shampoo products. Employing both qualitative and quantitative tools, the study utilises both descriptive analysis as well as statistical tests and regression analysis, finding that gender is the most prominent driver of differences in attitudes towards animal-tested products among the sample, whilst factors such as altruism levels, price and brand importance, pet ownership and attitudes towards animal testing statistically significantly affect respondents' probability of switching to non-animal-tested alternatives in different scenarios. Moreover, an experimental design embedded in the survey allows for consumers to be assigned different conditions, namely whether or not their shampoo purchases are constrained by specific purchase needs, which is not found to consistently affect respondents' decisions. Within the study's disclaimed limitations, these results carry significant implications for marketers, both in order to determine consumers with particular characteristics that can more successfully be targeted in order to effectively satisfy increased demand for ethical products, as well as which consumer groups would be likely to need more awareness and initiative in order to switch towards such products.

Keywords: Ethical Purchasing, Animal Testing, Attitudes, Purchase Intentions, Consumer Behaviour.

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Chapter 1 - Introduction

The term 'animal welfare' means different things to different people. Researchers tend to find animal welfare difficult to define because it includes several facets (Dawkins 2006, Webster 2005), and different authors emphasise and prioritise different elements in seeking to define this concept (Fraser 2008). However, there exists a common understanding that animal welfare comprises both the physical and mental health of animals, encompassing aspects such as the absence of hunger and thirst, disease, injury, stress or physical discomfort (Farm Animal Welfare Council 2006).

Meanwhile, Jha (2005) defines animal testing or animal research as the use of animals in experiments for commercial, academic or research purposes. Animal testing is a commonly-used tool to understand the effects of new ingredients and products (Giacomotto, Segalat 2010, Hendriksen 2009). Millions of experiments involving animals are carried out annually over the world (Doke, Dhawale 2015), with 3.52 million procedures, of which 1.8 million were for experimental purposes, performed in Great Britain alone in 2018 (UK Home Office 2019).

Humane Society International (2013a) maintain that, in the majority of instances, companies have a choice on whether to use animals for their testing or not. However, in certain instances, companies develop and use new ingredients for which there are no existing data, and "there aren't non-animal test methods available yet for every single test area that needs to be performed for new ingredients", as alternatives to animal tests were not considered a priority for a long time (Humane Society International 2013a). Furthermore, the tendency to utilise animal testing in the cosmetics industry is sustained by convention, and regulators tasked with the approval of cosmetics to be sold on the market tend to be very cautious and might delay approving products when they are based on unfamiliar non-animal test methods.

However, animal testing also has its limitations, mainly as certain physiological and genetic differences between animals and humans can potentially affect the validity of results obtained

through animal experimentation (DeGrazia 1996, Akhtar 2015). Moreover, laboratory procedures and environments can impact the results of tests by influencing animals' physiology and behaviours (Morgan, Tromborg 2007). These factors may mean that even if a product was proven to be safe for animals, it does not necessarily guarantee that it will be safe for humans (PETA n.d.a) and humans might be harmed due to misleading animal testing outcomes (Roberts, Kwan et al. 2002). With various alternatives available (Humane Society International 2013b, PETA n.d.b, Doke, Dhawale 2015), these limitations raise the question of justifying the use of animal testing except in the instances mentioned above, where non-animal test methods are not yet feasible (Humane Society International 2013a).

Concurrently, in recent years, there has been increased demand for ethical products and services (Hassan, Shaw et al. 2013), mainly from consumers and pressure groups who are increasingly calling for businesses to shift towards a more "ethical, ecological, and environmentally-friendly" approach (Ferdous, Aziz 2014 p.46). By demanding products of a higher ethical standard and avoiding or boycotting companies behaving unethically or providing unethical products – practices commonly termed as "consumer activism" – consumers themselves have the power to drive companies to become more socially responsible (DePelsmacker, Driesen et al. 2005, D'Astous, Legendre 2009, Brown, Dacin 2018). This means that increasingly, companies are forced to adapt their production and marketing activities to reflect this shift in consumers' buying behaviour and satisfy demands for ethical products (DePelsmacker, Driesen et al. 2005, Friedman 1995). Companies and marketers also need to identify the specific consumer groups who are most likely to engage in ethical consumption and purchase cruelty-free products - along with their specific characteristics. By focusing on segmenting the target market, companies can have a sound and holistic marketing strategy which allows them to stay focused and attract and convert high-quality leads.

The process of customers opting for products and services that do not compromise the well-being of humans, animals, the natural environment, and society at large can be defined as ethical purchasing (Ferdous, Aziz 2014). Whilst ethical purchasing as an umbrella term incorporates issues like environmental friendliness, fair trade, organic products and animal welfare, this study will focus mainly on issues related to animal welfare and testing. Specifically, the study will focus on shampoo products, since it is a widely used product by people of all ages and sexes, it is considered as a repeat consumer purchase, and is commonly tested on animals.

Up until the mid-1990s the area of consumers' ethical purchasing behaviour had been relatively unexplored, although more recently the importance placed on social responsibility in Marketing has grown substantially (Carrigan, Attalla 2001), and a growing number of studies are tackling different facets of consumers' attitudes and behaviour with regards to ethical issues and products (Bray, Johns et al. 2010). For instance, some studies have found that customers may be prepared to pay more for ethical products (Loureiro, Mccluskey et al. 2002), whilst others, e.g. Carrigan and Attalla (2001), have found the opposite, and that customers commonly trade off products' animal-testing features for price and other characteristics (e.g. Auger, Devinney 2007). Studies also outline other factors affecting consumers' attitudes and/or behaviour regarding ethical products, including gender (Harper, Henson 2001), vegetarianism (Hagelin, Carlsson et al. 2003), pet ownership (Furnham, Pinder 1990), emotions (e.g. Baumeister, Bratslavsky et al. 1998), knowledge (Vrij, Nunkoosing et al. 2003), education (Harper, Henson 2001), environmental consciousness (Kim, Chung 2011), and level of social media exposure (Morell 2014) amongst others.

Additionally, other studies consider other aspects related to this subject. For instance, multiple researchers (e.g. Carrigan, Attalla 2001, DePelsmacker, Driesen et al. 2005, Cherry, Caldwell 2013, Luchs, Naylor et al. 2010, Harper, Henson 2001) agree that, when it comes to ethical

buying, there exists a gap between customers' intentions and their actual purchasing behaviour, which also brings about important implications for marketers (Papaoikonomou, Ryan et al. 2010). Studies have also outlined how consumers may face a number of barriers in their decision-making processes concerning such products, for instance, uncertainty relating to lack of knowledge and choice (Hassan, Shaw et al. 2013). These and other factors will be explored in more detail in the following chapter.

The study

The aim of this study is to contribute to the literature primarily by analysing several factors affecting both consumers' attitudes towards animal testing, and their decisions on whether or not to purchase animal-tested or non-animal tested products, using a sample of University of Malta students. A combination of descriptive and statistical tests is used to analyse these factors, specifically focusing on shampoo as a repeat consumer purchase. The analysis is enriched through the experimental design embedded within the survey tool used to collect data for the study, allowing for different purchase requirement conditions to be assigned to respondents, as well as through the survey examining respondents' behaviour in different purchase scenarios.

Whilst descriptive statistics and tests consider a wide spectrum of factors on which data is collected, a primary focus will be laid on a set of factors, including price, altruism, concern for animal welfare, gender, and the effect of attitudes themselves on behaviour, for which hypotheses based on both findings from the literature as well as expectations are laid out in the Method chapter. Of these, a more specific focus is placed on consumers' level of altruism and how this interacts with both their attitudes on animal testing as well as with their purchase decisions, since this factor is less commonly considered by the literature. On a secondary level,

the study will also determine consumers' current level of awareness about the animal testing status of the products they commonly purchase, and their level of recognition of official animal testing labels.

Given the above, this study primarily aims to address the following questions:

- Which factors have the largest bearing on consumers' attitudes towards animal testing, and their behaviour intentions on whether or not to purchase animal-tested or non-animal tested products?

- Specifically, does the altruism level of consumers have an impact on their attitudes regarding animal testing and their likelihood to switch to a non-animal tested shampoo product?

- Which consumer groups are more likely to trade off a product's animal testing status for other characteristics such as price, quality or brand recognition?

- Would consumers be more willing to switch to a non-animal tested shampoo product if their choice of shampoo did not depend on a particular criterion such as having the need to buy anti-dandruff, or colour care?

Chapter 2 – Literature Review

The Increasing Importance of Ethical Consumption and Ethical Purchasing

As alluded to in the Introduction to this study, consumers are all the more engaging in socially aware consumption and demanding ethical alternatives to various products (Harrison, Newholm et al. 2005, Nicholls, Opal 2005), which has resulted in a rising interest in ethical purchasing and ethical products (Ferdous, Aziz 2014, Hassan, Shaw et al. 2013, Trudel, Cotte 2009). Ethical products are defined as those that satisfy one or several social or environmental criteria, such as safeguarding the wellbeing of animals and the natural environment, which can have an impact on the customer's purchasing decision-making (Bezençon, Blili 2010). Consumers that opt to purchase ethical products do so for a variety of reasons, primarily including environmental and ethical factors, but also authenticity and health considerations. This study considers the particular case of animal-tested products, looking at the factors determining both attitudes towards animal testing and consumer behaviour with respect to whether or not to switch to non-animal-tested products.

However, prior to delving into these factors, it is worth highlighting other facets of the wider debates about ethical purchasing in the literature. For instance, one point raised by Carrigan and Attalla (2001) is that consumers might be expected to be attracted to companies providing ethically sourced products, whilst boycotting companies that engage in unethical behaviour, particularly given the prevailing focus on ethical issues (Smith 1995). However, this does not necessarily mean that consumers will commit to ethical buying (Titus, Bradford 1996), as even if customers are willing to buy ethical products or support companies engaging in ethical behaviour, social responsibility may not be the main factor driving their decisions (Boulstridge, Carrigan 2000). In fact, research finds that when consumers think of ethical products, they assume a trade-off, most commonly associated with price, and since many consumers are not

prepared to make the assumed trade-off to purchase ethical products (Auger, Devinney 2007), the actual market share of these products is relatively small (Luchs, Naylor et al. 2010).

Legislation and regulation have also made a step forward in terms of moving into a socially responsible era, with provisions introduced to control the unethical use of animals and minimise the harm caused to animals during experimentation (Rollin 2003). However, marketers also have a role in engaging customers with socially-conscious products (Luchs, Naylor et al. 2010). Furthermore, the media (Carrigan, Attalla 2001) and particularly social media exposure, are very likely to influence consumers' purchase decisions (Kruse 2010). For instance, negative media publicity about companies behaving unethically can lead to customers boycotting the said companies. On the other hand, marketers can successfully utilise media channels by, for example, providing information and partnering with animal rights organisations to raise awareness on animal testing (Morell 2014).

Meanwhile, companies themselves also have an important role in engaging customers with their ethical products through Corporate Social Responsibility (CSR). CSR can be described as a company's intentional commitment to allocate resources to social or ethical actions (Madar, Huang et al. 2013). CSR issues are becoming increasingly more important drivers of corporate reputation (Fombrun et al., 2000) and public opinion about companies (Dawkins, Lewis 2003). Having said this, apart from more traditional forms of CSR such as contributing to communities, charitable donations, and health promotion and awareness campaigns, other important CSR initiatives may include environmentally-friendly operation, as well as reducing animal testing and selling animal welfare-friendly products (Shabib, Ganguli 2017). In fact, many cosmetics companies are increasingly producing and selling non-animal-testing products (Shabib, Ganguli 2017). Concurrently, studies confirm that increased consumer sensitivity to ethical issues is also prevalent in the cosmetics and beauty care industry, and consumers

increasingly favour cosmetics firms that engage in ethical practices (Papadopoulos, Karagouni et al. 2010). Moreover, it must be noted that the effectiveness of CSR initiatives on animal-welfare friendly products is enhanced when consumers are more aware and knowledgeable about related issues, and attach due importance to them (Mohr, Webb et al. 2001).

Lastly, one must also highlight the role of heightened attention. Heightened attention is often the first step in consumers' purchasing decision-making process, before searching for information, evaluating possibilities and alternatives, deciding on purchasing, and post-purchase feelings and behaviour (Noel 2009). This process is generally undertaken by consumers when the purchase in question is highly important, for example involving a higher price than usual. Heightened attention occurs when a consumer becomes triggered to a certain need by a stimulus such as a prominent advert or the sight of a new product in a shop (Noel 2009), something that can be harnessed by marketers promoting cruelty-free products by taking this into consideration in their marketing and advertising strategies.

Factors affecting Attitudes and Purchases of Animal-Friendly Products

Since socially responsible buying requires the contribution and interaction of both customer and manufacturer, companies also have the crucial need to recognise and understand consumer behaviour regarding purchases of animal-friendly products (Mombeini, Sha'abani et al. 2015). Even though there exists an increase in demand for products which are perceived to be more animal-welfare friendly, there are a number of factors that affect whether particular consumers demand such products, as well as a number of barriers that consumers face in purchasing these products (Frewer, Salter 2002, Harper, Henson 2001), which are crucial for companies to

recognise and take into account – something which also has important implications for companies' marketing activities.

Information and Labelling

One of the main barriers to purchasing non-animal tested products is the lack of information about such products (e.g. Meehan, Cowan et al. 2002). This is also one of the causes of the gap between attitudes/beliefs and actual buying behaviour (Harper, Henson 2001), which will be explained in further detail below.

Information has an essential role for a consumer to be able to make informed purchasing decisions. In the particular case of animal testing and ethical purchasing, information to consumers about the role of animal use in production and related ethical issues is key (Sproles, Geistfeld et al. 1978, Harper, Henson 2001), particularly as the more informed consumers are, the stronger their perceived responsibility to buy ethical products and their engagement with such products (Toma, Stott et al. 2012). Nevertheless, consumers generally feel they are not well informed about the use of animals in production systems and suggest a general lack of market transparency around the issue (Harper, Henson 2001).

The above may be addressed through honest and clear labelling. The role of labelling in guiding purchase decisions has increased in importance as it allows consumers to make purchase decisions that are consistent with their needs and preferences (Annunziata, Ianuario et al. 2011). Clear labelling allows consumers to make ethical decisions "based on moral-affective feelings" (Bradu, Orquin et al. 2014 p.293) in a fast and efficient manner, which is important since consumers are often unwilling to spend much time considering and comparing information when purchasing personal care products (Bradu, Orquin et al. 2014). In a study by Gracia, Loureiro et al. (2009), written information on labels was the most popular way in which

respondents preferred animal-friendly products to be distinguished in the market, chosen by 39% of respondents; meanwhile, 35% liked the idea of logos while 26% suggested the use of grading or a star system on the packaging. In practice, a 2009 report adopted by the European Commission floated the possibility of a clear, uniform and scientifically-based EU-wide animal welfare label for products with a higher ethical standard than the legal minimum (European Commission 2009, Gracia, Loureiro et al. 2009), and a consultative sub-group on animal-welfare labelling has recently been set up under the EU Platform on Animal Welfare (European Commission n.d.).

Customers need to be presented with clear, concise and relevant information which does not lead to them ignore the label altogether and further alienate them from their consumer journey. However, when a consumer is provided with all the necessary knowledge to make an informed choice, this can also "cause stress" and push them to make a different choice than the one they would like to make (Ehrich, Irwin 2005). Excess information may also cause consumers to engage in what Harper and Henson (2001) refer to as "voluntary ignorance", which is done to abrogate responsibility for animal welfare. Therefore, marketers must also be aware of the potential effects of subjecting consumers to information overload, especially on labels (Harper, Henson 2001).

Current Labelling relating to Animal Welfare

A number of companies selling products which are not animal-tested aim to inform consumers of this through labelling their products as 'not tested on animals' or 'cruelty-free'. When companies claim that their products are 'not tested on animals', they are signifying that they do not test on animals or commission such tests both for their ingredients and for their final products (PETA n.d.c). Meanwhile, when companies claim that their brands or products are

cruelty-free, they are certifying that they not only do not conduct animal tests themselves but guarantee that none of their ingredients are derived from animals in one way or another. Therefore, this term goes beyond the former, and includes having agreements with suppliers that the latter shall not conduct, commission, pay for or allow tests on animals for any ingredients purchased by the brand or company (Cruelty Free International n.d.).

The below figure illustrates three examples of widely used animal testing labels. These are displayed to respondents in the survey used within this study, without the wording (where applicable), to test respondents' ability to recognise these labels and their correct meanings. From left to right, these logos are PETA's "Caring Consumer" cruelty-free logo, the Not Tested on Animals logo by Choose Cruelty Free, and the Leaping Bunny logo, a cruelty-free logo by the Coalition for Consumer Information on Cosmetics (CCIC) (Cruelty Free International n.d., Choose Cruelty Free n.d., PETA n.d.c).

Figure 1 – Animal Testing Labels

Attitude-Behaviour Gap

As alluded to earlier, several studies in the literature agree that there is often a prominent gap between ethical purchase intentions and actual buying behaviour (DePelsmacker, Driesen et al.

2005, Harper, Henson 2001, Carrigan, Attalla 2001), and have tried to understand the reason as to why consumers are in favour of purchasing ethically but their actual purchases fail to follow (Cherry, Caldwell 2013, Kim, Oh et al. 2016). Importantly, this implies that ethical consumption can be lower in practice than what survey-based studies may indicate (Auger, Devinney 2007).

Ehrich, Irwin (2005) state that evidence suggests that although consumers care about ethical issues, this factor may not be at the forefront of their decisions. They may, in fact, prioritise other factors such as price and quality and when they are faced with a trade-off, they sacrifice ethical attributes first. Higher prices associated with animal-welfare friendly products are therefore commonly linked with this attitude-behaviour gap (Ortega 1994). However other factors may also contribute to this gap, for example, customer confusion over product claims, as well as insufficient information, which hinders customers' ability to choose ethical products in line with their intentions (Carrigan, Attalla 2001, Morris, Hastak et al. 1995).

Pricing

Coupled with their increased demand for ethical products, consumers also increasingly expect more convenient and affordable access to ethical products and services (White, MacDonnell et al. 2012). However, pricing of ethical products remains an issue of debate. Studies find that ethical products are typically more expensive than their equivalent counterpart (Toma, Stott et al. 2012), and customers typically consider this higher pricing to be a barrier to purchasing ethical products (Uusitalo, Oksanen 2004). As already discussed, consumers commonly face a trade-off with regards to ethical products, where ethical considerations are usually the first to be given up, and hence higher pricing of such products tends to negatively affect the purchase of ethical products.

In fact, Carrigan and Attalla (2001) find that, despite the fact that consumer purchasing has become more sophisticated and that consumers are expected to prefer ethical products, in practice consumers are not willing to pay a 10 – 15% price premium for an ethical product. Ferdous and Aziz (2014) and Papaoikonomou, Ryan et al. (2010) back this up by saying that while customers are indeed concerned about ethical issues, they shop primarily at establishments that offer good quality products with cheaper prices, with price, quality, brand, availability and convenience all being given priority over ethical considerations. However, such findings are not unanimous in the literature. For instance, Creyer (1997) finds that consumers are in fact willing to pay more for an ethical product as a means to reward the company for its ethical behaviour.

Altruism

Altruism typically refers to individuals' inclination towards the selfless concern for others' wellbeing and the moral obligation to prioritise any consequences to others rather than for themselves (Piliavin, Charng 1990). Apart from behaviours such as volunteering and donating to charities (Webb, Green et al. 2000), consumers' engagement in socially responsible consumer behaviour can also be considered as altruistic behaviour given that they take into consideration the well-being of, as well as simultaneously avoiding harm to, third parties such as the environment and animals. Carrigan and Attalla (2001) find that more altruistic consumers are more likely to favour companies engaging in ethical business practices. Correspondingly, another study by Vilela and Nelson (2006) finds that more altruistic consumers are more inclined to purchase products that support a cause, whilst Paek and Nelson (2009) find that altruism is a strong predictor of consumers' discriminating between companies based on their ethical behaviour.

Vegetarianism and Pet Ownership

Vegetarianism is found to predict lower acceptance of animal testing, when comparing the attitudes of vegetarian and non-vegetarian consumers. This is consistent with findings that link vegetarianism to a broader concern with animal rights and protection, as well as more altruistic values (Hagelin, Carlsson et al. 2003). Meanwhile, having domestic animals as pets in human families is also a strong determinant of consumers' attitudes towards issues regarding animal welfare. In fact, pet ownership is commonly found to negatively affect the acceptance of the use of animals in research (Harper, Henson 2001, Furnham, Pinder 1990), possibly as pet owners' emotional attachment with their pets is reflected in more favourable views and attitudes towards other animals (Hagelin, Johansson et al. 2002).

Gender

Gender is also found to play an important role in determining attitudes towards animals and animal welfare (Harper, Henson 2001). Predominantly, women are found to be more concerned with animal welfare and tolerate animal-testing less than men (Swami, Furnham et al. 2008). This could be linked to the fact that females are found to be more likely to attribute mental states to animals and to sympathise with animals if they believe that the use of animals in research inflicts pain or suffering (Vrij, Nunkoosing et al. 2003).

Emotions and Knowledge

Emotions, knowledge and attitudes on the subjects of animal welfare and testing are interlinked and play a substantial role in determining the choices consumers make towards buying animal-

welfare friendly products. Emotions such as pride and contentment, guilt, regret, shame and embarrassment are proven to determine ethical choices (Gregory-Smith, Smith et al. 2013, Steenhaut, Van Kenhove 2006), and Baumeister, Bratslavsky et al. (1998) emphasise that guilt is a critical pro-ethical emotion as consumers may feel the need to compensate for the caused harm, which turns into a moral necessity. Furthermore, people who believe that animals possess mental abilities similar to humans and are capable of feeling emotions such as happiness and sadness as well as fear and pleasure are less supportive of animal use in research. Hence, belief in animal mind has a negative correlation with justifying animal testing (Knight, Barnett 2008).

Knowledge is also an important factor in shaping attitudes and behaviour. Vrij, Nunkoosing et al. (2003) find that more knowledge of animal use procedures leads to reduced support for animal testing and also influences attitudes towards animal testing. McEachern, Schröder et al. (2007) corroborate this, finding that knowledge has a significant role in shaping attitudes, which in turn may form a moral obligation for consumers to opt for more animal-friendly options. Kim and Chung (2011) also state that increased consumer knowledge is required in order to generate increased concern for animal welfare, and for consumers to take decisions which promote animal welfare.

Other Factors

Environmental Consciousness

Environmental consciousness is also found to positively influence attitudes towards purchases of organic personal care products. In fact, several studies find that concern for the environment is related to negative attitudes on animal research (Hagelin, Carlsson et al. 2003).

Environmental concern is also an important determinant of consumer behaviour with regards to other ethical products (e.g. Kim, Chung 2011, Paladino 2005).

Education

When it comes to education, researchers report different findings with regards to consumers' acceptance of animal testing. Some researchers (e.g. María 2006) find that education positively impacts consumers' welfare attitudes and behaviour; however, Clemence and Laeman (2016) show that those most in favour of a Government ban on animal testing tend to be less educated, whilst Funk, Rainie et al. (2015) find that graduates as opposed to individuals with a lesser degree of education, have a tendency to be more supportive towards animal testing. In contrast, some studies conclude that consumers' decisions are not affected by education altogether (Carlsson, Frykblom et al. 2007). Lastly, Harper and Henson (2001) maintain that educational attainment may affect consumers' purchasing behaviour through the fact that more educated consumers are likely to have improved socio-economic status hence they would be more willing to pay for animal welfare-friendly products.

Children in the Household

Lastly, the presence and number of children in the household can have different implications for ethical buying behaviour. The presence of children can negatively impact ethical purchasing behaviour due to potential time and income constraints, as animal-friendly products tend to be more expensive (Gracia, Loureiro et al. 2009, Toma, McVittie et al. 2010). On the other hand, both Harper and Henson (2001) and Toma, Stott et al. (2012) find that families with children tend to exhibit stronger pro-animal-welfare behaviour.

Summary

In summary, literature indicates that safeguarding animal welfare has become increasingly important over the years, and more and more consumers are looking for ethical products and engaging in socially aware consumption, even though this factor may not currently be given top priority in their purchases. The role of companies in contributing towards reducing unethical animal use by reducing testing and selling animal welfare-friendly products is also explored. Moreover, several researchers agree about the presence of an attitude-behaviour gap, which prevents consumers from translating positive attitudes into actual purchase behaviour. This may be either due to factors such as lack of information as well as the possibility of a price mark-up in animal-welfare friendly products. Many studies also look at various other consumer characteristics which have an effect on ethical purchasing, including gender, education, pet ownership, attitudes, emotions and knowledge, vegetarianism, environmental consciousness, and the presence of children in the household amongst others, as well as barriers faced by consumers, which hinder them from purchasing animal-friendly products – all of which are important for companies to consider in seeking to successfully market and satisfy the increasing demand for such products. The main findings in the literature with respect to each factor considered are summarised in Table 1 below.

Table 1 - Summary of literature findings on factors affecting attitudes and consumer behaviour related to ethical products

Theme	Main Findings	Authors
Information and Labelling	Information about animal use in production is essential for consumer decision-making, but lack of information prevails; need for clear labelling.	Bradu, Orquin et al (2014), Ehrich and Irwin (2005); Harper and Henson (2001); Toma, Stott et al. (2012)

Attitude-Behaviour Gap	Ethical purchase intentions are not always translated into actual buying behaviour; possibly due to prioritising other factors, lack of information, or price sensitivity.	Carrigan and Attalla (2001), DePelsmacker, Driesen et al. (2005), Ehrich and Irwin (2005)
Pricing	Consumers typically found to be unwilling to pay a premium for ethical products, and to prioritise price and other factors above ethics, although such findings are not unanimous.	Carrigan and Attalla (2001), Creyer (1997), Ferdous and Aziz (2014), Papaoikonomou and Ryan (2010)
Altruism	More altruistic consumers found to favour companies engaged in ethical practices and products that support a cause.	Carrigan and Attalla (2001), Paek and Nelson (2009), Vilela and Nelson (2006)
Vegetarianism	Vegetarianism predicts lower acceptance of animal testing.	Hagelin, Carlsson et al. (2003)
Pet Ownership	Pet ownership is linked to lower acceptance of animal use in research.	Furnham and Pinder (1990), Harper and Henson (2001)
Gender	Females predominantly found to accept animal testing less than men.	Swami, Furnham et al. (2008), Vrij, Nunkoosing et al. (2003)
Emotions	Emotions such as pride, guilt and regret can determine ethical choices, whilst belief in animals' capability to feel emotions affects acceptance of animal testing.	Baumeister, Bratslavsky et al. (1998), Gregory-Smith, Smith et al. (2013), Steenhaut and Van Kenhove (2006)

Knowledge	More knowledge about animal use also found to shape attitudes and behaviour, lowering support for animal testing.	McEachern, Schröder et al. (2007), Vrij, Nunkoosing et al. (2003)
Environmental Consciousness	Concern for environmental issues found to predict negative attitudes on animal research.	Hagelin, Carlsson et al. (2003)
Education	Mixed findings are reported about the relationship between level of education and attitudes and behaviour regarding animal welfare, whilst other studies find no effect for education.	Carlsson, Frykblom et al. (2007), Clemence and Laeman (2016), María (2006)
Children in the Household	Children in the household associated with time and income constraints which may hinder ethical purchasing, but families with children also found to exhibit stronger pro-animal-welfare behaviour.	Toma, McVittie et al. (2010), Toma, Stott et al. (2012)

As previously explained, this study addresses many of these aspects in the context of the attitudes and purchasing behaviour, focusing specifically on animal-tested products. In so doing, this study will contribute to the literature by providing a case study which addresses a diverse set of questions related to the interaction between marketing and the animal testing status of products. Whilst there are studies looking at both factors affecting attitudes (e.g. Toma, McVittie et al. 2010) and consumer behaviour (e.g. Annunziata, Ianuario et al. 2011, Kim, Chung 2011) with regards to other ethical products such as organic and fair-trade food

products (which in themselves can also impact animal welfare), to the researcher's knowledge, this is not the case regarding animal-tested products.

In fact, there are studies considering factors affecting attitudes towards animal-testing and animal-tested products (e.g. Vrij, Nunkoosing et al. 2003, Swami, Furnham et al. 2008), but no studies have considered factors affecting consumer behaviour and how attitudes themselves affect consumer behaviour in the specific case of animal-tested products. This study will therefore address this gap by considering factors affecting both attitudes and consumer behaviour in the case of animal tested products. Furthermore, the study focuses on a number of key factors, including altruism, gender, price sensitivity, pet ownership and vegetarianism/veganism. Whilst all the other aforementioned factors have been considered as determinants of attitudes or consumer behaviour regarding animal welfare or animal-tested products, this is not the case for altruism. Therefore, this study will also contribute by bridging this gap and placing a specific focus on altruism. Finally, this study will also be amongst the first studies in Malta to consider questions related to animal welfare and attitudes.

Chapter 3 – The Method

Survey Distribution and Data Collection

Researchers have employed different methodological approaches in studying and exploring consumers' attitudes and behaviour with regards to ethical products, including deep interviews, focus groups, as well as surveys and experimental approaches (Annunziata, Ianuario et al. 2011). In the present study, data was collected using a survey which was formulated using Qualtrics. The present study therefore makes use of a primary source of data. Data collected allows for the use of both quantitative and qualitative research methods, and as can be verified in the forthcoming sections, the analysis mainly utilises quantitative techniques but also includes qualitative elements.

Prior to constructing the study sample, the target population was identified. The population required for this study includes people of over 17 years of age, of any gender, locality and nationality, who were enrolled in any course at the University of Malta at the time of the study. The survey was open to both males and females since the study focuses intentionally on a product which all genders make use of – shampoo.

Given the above, the survey was distributed through the University of Malta's eSims platform from the end of June till mid-July 2020. Participants could also be living abroad as the survey was distributed during Covid-19 whereby some foreign students might have had to travel back to their country.

Summary of Survey Content

In answering the survey, respondents were presented with 34 questions, which are reproduced in Appendix 2. Questions presented to all respondents were identical; however, the survey software was programmed such that respondents are randomly allocated one of two conditions,

based on which they are to answer the questions presented. This characteristic yields an experimental design to the survey used, where the effect of the difference between these conditions will be examined.

The first condition was that in answering the survey, respondents were required to assume that their choice of shampoo depends on a particular criterion, such as having the need to buy anti-dandruff or colour-care shampoo, whilst the second was that respondents were to assume that their choice of shampoo does not depend on any such specific criterion. A target of 100 responses to be collected was set; half of these were to be allocated the first condition and the rest allocated the second condition.

The survey starts by asking respondents general questions about their shampoo purchases, including their frequency of purchase, how much they normally spend, the brand name of the shampoo they purchase the most, as well as about the importance they give to certain product characteristics, in this case, price, quality, brand and its animal-testing status. Subsequently, respondents were asked whether they knew if they have ever purchased a shampoo product which was not tested on animals, and if yes, how they knew that it was not animal-tested – whether through product labelling, online sources, by word of mouth or from any other source. Respondents were then asked to identify the meaning of three basic logos related to animal testing and cruelty-free to be able to assess the level of awareness and knowledge they have on popular identifiers of cruelty-free logos in product packaging.

Following this stage, respondents were presented with questions regarding their attitudes towards animal testing in product research and development. Specifically, the questions were the below:

- Would you prohibit animal research for shampoo development if you had the authority to do so?

- Do you think that the fact that we have the option to use animals in research gives us the right to do so?

- Do you think animals have feelings?

- Do you think it is more acceptable to test on animals for scientific purposes if the effects on the animals are temporary?

The following section presents to the respondents a set of five scenarios, which they must answer in the context of the condition they were assigned. For all the questions in the below scenarios, respondents were to choose between the shampoo they currently purchase and a non-animal-tested alternative, where the shampoo they currently purchase is named Shampoo X and the alternative, Shampoo Y.

The first four scenarios were a situation wherein the respondent is looking at a shelf where Shampoo X and Shampoo Y are available, and the respondent must choose between the two in the below cases:

- Shampoo X is €1 cheaper than Shampoo Y

- Shampoo X is €2 cheaper than Shampoo Y

- There is no price difference between the products, and the brand name of Shampoo Y is recognisable and familiar to the respondent

- There is no price difference between the products, and the brand name of Shampoo Y is unknown to the respondent

Subsequently, respondents were asked how they would feel if Shampoo X had a prominent label or logo which outlined that it is in fact tested on animals. Then, in the last scenario, they were told to assume that all products available in a particular shop are tested on animals, and

asked whether they would buy a product or go to another shop to search for a cruelty-free alternative.

In the context of the foregoing explanation, it should therefore be noted that the study utilises elements of a within-subjects design. According to Babin and Zikmund (2015), this involves each respondent giving a response for each treatment, rather than one treatment being applied to each respondent. In this case, each respondent is required to respond each of these scenarios as their attributes change from one question to the next.

The next part intended to determine respondents' level of altruistic behaviour. In the absence of the possibility of directly observing an individual in specific, real-life scenarios, a next-best option is to directly ask a person to report his presumed behaviour in the given situations (Sawyer 1966). Hence, the survey included a simple altruism test using the Adapted Self-Report Altruism Scale (Witt, Boleman 2009) based on the original Self-Report Altruism Scale (Rushton, Roland et al. 1981).

This scale uses Likert-scale questions and allows respondents to "rate the frequency with which they have engaged in the altruistic behaviours using the categories, 'Never', 'Once', 'More than Once', 'Often' and 'Very Often'" (Rushton, Roland et al. 1981 p.296). A final score is calculated by summing up all the ratings, where the higher the score, the higher the altruism. The questions used were the following:

1. I would give directions to someone I did not know.

2. I would give money to a charity.

3. I would help carry belongings of someone I did not know.

4. I would allow someone I did not know to go in front of me in line.

5. I would let a neighbour I did not know well borrow an item of value to me.

27

6. I would offer to help a handicapped or elderly person across the street.

7. I would offer my seat on a train or bus to someone who was standing.

Meanwhile, the last section of the survey contained questions intended to serve as a proxy for respondents' level of concern for animal welfare. Specifically, respondents are asked whether they own any pets, whether they like being in the company of animals, and whether they follow a vegetarian or vegan diet. At the end of the survey, the gender and age of the respondents were recorded.

One must note that, whilst the literature review outlined a substantial number of factors considered in the literature as possible determinants of purchase behaviour in the context of animal-tested products, the survey does not tackle some of these, in order to avoid an excessively-long set of questions for the respondent. Issues which were not tackled within the survey tool used include environmental consciousness, children in the household and level of education.

Descriptive Statistics and Statistical Tests

Descriptive Statistics

Prior to conducting more formal statistical tests, some descriptive statistics are formulated to identify some initial patterns in the data collected. Such descriptive statistics are presented in graphical and tabular form, as can be seen in the Results chapter.

Namely, after looking at the age and gender distribution of the sample across the two aforementioned conditions, the first set of descriptive statistics is created in order to get an insight into respondents' purchase behaviour, spending patterns and importance rating they

assign to several product characteristics namely price, quality, brand, and the animal-tested status of the product in question. Apart from a graphical representation depicting the frequency at each level of the importance ratings, a table is also presented, displaying the means, standard deviation and ranges for each of the rating categories.

Analysing current purchase behaviour also includes looking at consumers' awareness and knowledge with regards to the animal-testing features of the products they currently purchase – namely whether respondents have ever owned non-animal-tested products, and if so, whether and how they were informed about its animal-testing status. Next, the level of knowledge with regards to animal testing related labels is examined. The results are presented by means of pie charts and the correct answers are displayed in green.

The next part of the descriptive analysis is linked to the attitudinal questions about animal testing, where the distribution of responses to these questions is laid out. Subsequently, the responses to the five aforementioned scenarios are also described and illustrated graphically. Within the graphs, responses are organised depending on the condition presented to the respondent, also to obtain a preliminary insight into whether the condition makes a difference to respondents' choices. At this stage, responses to an open-ended question about feelings associated with animal-testing labels are also summarised. Lastly, the analysis focuses on altruism – looking at the distribution of total scores obtained by respondents on the altruism scale, and how these correspond to different respondent characteristics – before presenting a description of the responses to the 'indicators of concern for animal welfare'.

Statistical Tests and Regression Analysis

As previously indicated, the descriptive analysis is followed up by a battery of statistical tests and regression analysis. All tests were carried out using Microsoft Excel's Data Analysis toolkit.

The first set of statistical tests is carried out in order to analyse which factors affect respondents' attitudes towards animal testing. In particular, it is assessed whether the indicators of concern for animal welfare, gender, and the level of altruism statistically significantly affect respondents' attitudes towards animal testing, and whether respondents' attitudes correspond as expected with the importance attached to products not being tested on animals.

Two remarks which remain valid for all subsequent statistical analysis are to be made at this stage. Firstly, tests related to the attitudinal question 'Do you think animals have feelings?' are not run, due to the fact that out of 102 respondents in the final sample, 101 responded 'Yes', leaving little room for analysis. Age is also not included as a determinant in this and all further analysis, both as it is not a key factor of analysis and the absolute majority of respondents fall within the expected age groups of university students.

When testing for the effect of the first four abovementioned explanatory variables (the three indicators of concern for animal welfare and gender) on the responses to the attitudinal questions on animal testing, both the dependent variable (the attitudinal indicators) and the explanatory variable are nominal variables, following the explanation found in Babin and Zikmund (2015). Therefore, once again following Babin and Zikmund (2015), the appropriate statistical tests in this case are Chi-Square Tests for Independence.

The Chi-Square test examines whether there is a statistically significant relationship between two nominal or ordinal variables, by tabulating two variables against each other and comparing how close the distribution of the observed frequencies for each combination of the variables

are to the expected frequencies, with a null hypothesis of no relationship between the variables – i.e. a null hypothesis that the variables are independent of each other (Babin, Zikmund 2015). The expected frequency of each cell within the table is given by

$$E_{ij} = \frac{R_i C_j}{n}$$

Where R_i is the total observed frequency count in the ith row of the table of variables, C_j is the total observed frequency count in the jth column, and n is the sample size. The Chi-Square test statistic is a function of the differences between the observed values O_i and the expected values, E_i:

$$\chi^2 = \sum \frac{(O_i - E_i)^2}{E_i}$$

A practical example of the use of this test is illustrated in Table 24 in Appendix 4. In this case, the observed number of pet owners who answered 'Yes' is 51, whilst the expected value is 47.2. The χ^2 statistic sums up the functions of all six such differences as seen in the equation above, which in this case sum up to 3.922. At a 5% level of significance with 2 degrees of freedom, where $d.f. = (r-1)(c-1)$, and where r is the number of rows in the table and c is the number of columns, the critical value is 5.991, thus there is no significant relationship between the variables at a 95% level of confidence. As demonstrated in the table, one can also see that the p-value is 0.1407, thus the null hypothesis of no relationship is not rejected even at a 10% level of significance.

On the other hand, when testing for a relationship between the attitudinal indicators (as the dependent variable) and altruism and the importance rating given to non-animal-testing in products, respectively, the explanatory variables are interval variables. Although there has been significant discussion as to whether Likert Scales (such as those of importance attached to price, brand, quality and animal testing status) are ordinal or interval variables, they are

commonly treated as interval variables in marketing research, and thus can be used for a larger array of tests and as continuous variables for regression analysis (Carifio, Perla 2007; Wu, Leung 2017). Meanwhile, the level of altruism is a summated scale, obtained through summing up the responses to each of the Likert items making up the Altruism Scale used within the survey, which constitutes an interval scale (Carifio, Perla 2007, Babin, Zikmund 2015). In these two cases, with a nominal dependent variable and an interval explanatory variable, the appropriate test to be carried out is a t-test (Babin, Zikmund 2015).

The t-test can be used to assess whether there is a statistically significant difference between two mean values. In a practical example from the various t-tests conducted in this study and presented in the upcoming Results chapter, one can use a t-test to ascertain whether the mean altruism score of respondents indicating positive attitudes towards animal testing differs significantly from the mean altruism score of respondents who oppose it. The t-test statistic is:

$$t = \frac{\bar{X}_1 - \bar{X}_2}{S_{\bar{X}_1 - \bar{X}_2}}$$

Where $\bar{X}_1$ and $\bar{X}_2$ are the sample means in question and $S_{\bar{X}_1 - \bar{X}_2}$ is the pooled standard error of difference between means, calculated as $S_{\bar{X}_1 - \bar{X}_2} = \sqrt{\left(\frac{(n-1)S_1^2 + (n_2-1)S_2^2}{n_1 + n_2 - 2}\right)\left(\frac{1}{n_1} + \frac{1}{n_2}\right)}$, where S_1^2 and S_2^2 and n_1 and n_2 are the variances and sample sizes of the first and second group respectively. t-Tests run are two-tailed tests, and the Microsoft Excel Data Analysis tool uses t-tests assuming independent samples, which is the rule of thumb in marketing research (Babin, Zikmund 2015), as opposed to the paired samples t-test.

Subsequently, regression analysis is used to analyse which factors can explain the importance that a respondent attaches to their shampoo product not being tested on animals, and thus also to see which consumer groups could be more or less likely to trade off animal-testing status for other product characteristics. Regression analysis was preferred for this purpose to individual

tests as previously used, in order to control for a greater number of variables at a time, since relevant explanatory variables now also include the other importance ratings (given to price, brand, and quality), which can explain any trade-off between these respective characteristics, as well as the attitudinal indicators themselves. Regressions were run using Microsoft Excel, as was the case with the statistical tests previously described.

The regression equation used for this purpose is the below:

$$NTA = Intercept + \beta_1 Price + \beta_2 Quality + \beta_3 Brand + \beta_4 Prohibit + \beta_5 Option$$
$$+ \beta_6 Temporary + \beta_7 Altruism + \beta_8 Pets + \beta_9 Company + \beta_{10} Veg$$
$$+ \beta_{11} Female + \mu$$

Where:

- NTA is the importance rating attached by the respondent to their shampoo product not being animal tested in the relevant Likert Scale question (taking a value ranging from 1 (Not Important) to 4 (Very important);

- $Price$, $Quality$ and $Brand$ are the importance ratings attached by the respondent to these factors respectively;

- $Prohibit$ is a dummy variable, taking a value of 1 if the respondent answers 'Yes' to the question 'Would you prohibit animal research for shampoo development if you had the authority to do so?', and 0 otherwise;

- $Option$ is a dummy variable, taking a value of 1 if the respondent answers 'Yes' to the question 'Do you think that the fact that we have the option to use animals in research gives us the right to do so?', and 0 otherwise;

- *Temporary* is a dummy variable, taking a value of 1 if the respondent answers 'Yes' to the question 'Do you think it is more acceptable to test on animals for scientific purposes if the effects on the animals are temporary?', and 0 otherwise;

- *Altruism* is the respondent's total score on the altruism scale;

- *Pets* is a dummy variable that takes a value of 1 if the respondent owns pets, and 0 if not;

- *Company* is a dummy variable that takes a value of 1 if the respondent enjoys the company of animals, and 0 if not;

- *Veg* is a dummy variable that takes a value of 1 if the respondent is vegetarian or vegan, and 0 if not;

- *Female* is a dummy variable to account for gender, which takes a value of 1 if the respondent is a female, and 0 if male; and

- μ is the regression error term.

It should be noted that the above regression does not control for which of the two conditions the respondent has been assigned, as the conditions relate only to the five scenarios analysed below.

Regression analysis is also used in order to analyse respondents' behaviour in the scenarios given. In the first four scenarios, where the respondent is asked to choose whether they would stick to Shampoo X or choose Shampoo Y in different situations, the following regression is run:

$$ShampooY = Intercept + \beta_1 NTA + \beta_2 Price + \beta_3 Quality + \beta_4 Brand + \beta_5 Condition$$
$$+ \beta_6 Prohibit + \beta_7 Option + \beta_8 Temporary + \beta_9 Altruism + \beta_{10} Pets$$
$$+ \beta_{11} Company + \beta_{12} Veg + \beta_{13} Female + \mu$$

Where $ShampooY$ is a dummy variable that takes a value of 1 if the respondent indicates they would switch to Shampoo Y in the particular scenario, $Condition$ is a dummy variable that takes a value of 1 when the respondent is assigned the condition that their shampoo purchase depends on some specific requirement and 0 if assigned the opposite condition, and all other explanatory variables are as explained in the previous regression. Therefore, the coefficients of each explanatory variable indicate whether the particular variable reduces or increases the value of the dependent variable $ShampooY$, and therefore whether or not the particular variable increases or decreases the probability of $ShampooY$ taking a value of 1, signifying an increased or decreased likelihood, respectively, of respondents switching to the non-animal-tested alternative.

Meanwhile, in the last scenario, where respondents are asked whether they would buy the animal-tested product or try to search for a non-animal-tested alternative in another shop, the regression used is the below:

$$OtherShop = Intercept + \beta_1 NTA + \beta_2 Price + \beta_3 Quality + \beta_4 Brand + \beta_5 Condition$$
$$+ \beta_6 Prohibit + \beta_7 Option + \beta_8 Temporary + \beta_9 Altruism + \beta_{10} Pets$$
$$+ \beta_{11} Company + \beta_{12} Veg + \beta_{13} Female + \mu$$

Where $OtherShop$ takes a value of 1 if the respondent would choose to search for an alternative in another shop and 0 if not, and where all explanatory variables are as explained above.

Therefore, the above statistical analysis complements the descriptive analysis in answering the main research questions that the study seeks to explore. In particular, these tests allow for the identification of the factors which have significant effects on attitudes towards animal testing,

as well as the factors which explain which consumers are more likely to prioritise the animal-testing status of a product, and to switch to non-animal tested products in different scenarios. The depth of analysis is strengthened by also considering the effects of altruism on the above-mentioned results, as well as by identifying the effect of having specific purchase requirements for shampoo products which may otherwise constrain choice.

Hypotheses

As outlined above, a broad array of descriptive statistics and statistical tests are performed using data obtained through this study. However, as outlined in the Introduction, certain variables and relationships are considered of a more primary interest in this analysis of attitudes and consumer behaviour in the context of animal-tested products, and in seeking to answer the research questions laid down earlier. Therefore, hereunder I outline a number of broad hypotheses, informed by the literature as well as by expectation, and centred around these variables of key interest. These hypotheses are the below:

Table 2 - Hypotheses set for factors of key interest

Hypothesis	Factor	Hypothesis
Hypothesis 1	**Gender**	Females are expected to be less approving of animal testing, and to be more disposed to switch towards non-animal-tested products, than males.
Hypothesis 2	**Altruism**	More altruistic respondents are also expected to hold less favourable attitudes towards animal testing, and to be more likely to switch to non-animal-tested products.

Hypothesis 3	**Price Sensitivity**	Focusing on price as the most central of the different product characteristics, it is expected that respondents will in general be price sensitive and unwilling to pay a significant premium for non-animal-tested products.
Hypothesis 4	**Concern for Animal Welfare**	It is expected that the indicators of concern for animal welfare, of which pet ownership is of most note, are positively related to more favourable attitudes towards non-animal-tested products and predict a higher probability of switching to non-animal-tested products.
Hypothesis 5	**Specific Conditions**	It is expected that respondents whose purchase decisions are conditioned by specific purchase criteria, such as needing to buy anti-dandruff shampoo, would be more constrained and thus less likely to switch to non-animal-tested products.
Hypothesis 6	**Attitudes**	Lastly, it is hypothesised that attitudes themselves determine consumer behaviour, such that respondents who express attitudes which oppose animal testing would be more likely to switch to the non-animal-tested alternative.

Chapter 4 – Data and Results

Data Collection and Cleaning

The survey was closed upon reaching a total of 150 collected responses, and a process of data cleaning was subsequently undertaken. This procedure removed incomplete responses as well as those wherein respondents chose to opt-out in the final stage. After cleaning, a total of 102 responses were left in the sample.

Due to data cleaning, there was the possibility that the ratio of respondents assigned each of the two conditions gets disrupted, such as due to, for example, a disproportionate number of respondents in one condition not completing the survey. However, this was not the case, as the post-cleaning sample of 102 respondents is split such that 52 respondents were assigned the condition whereby their purchases depend on a specific criterion, and 50 assigned the other condition.

Descriptive Statistics
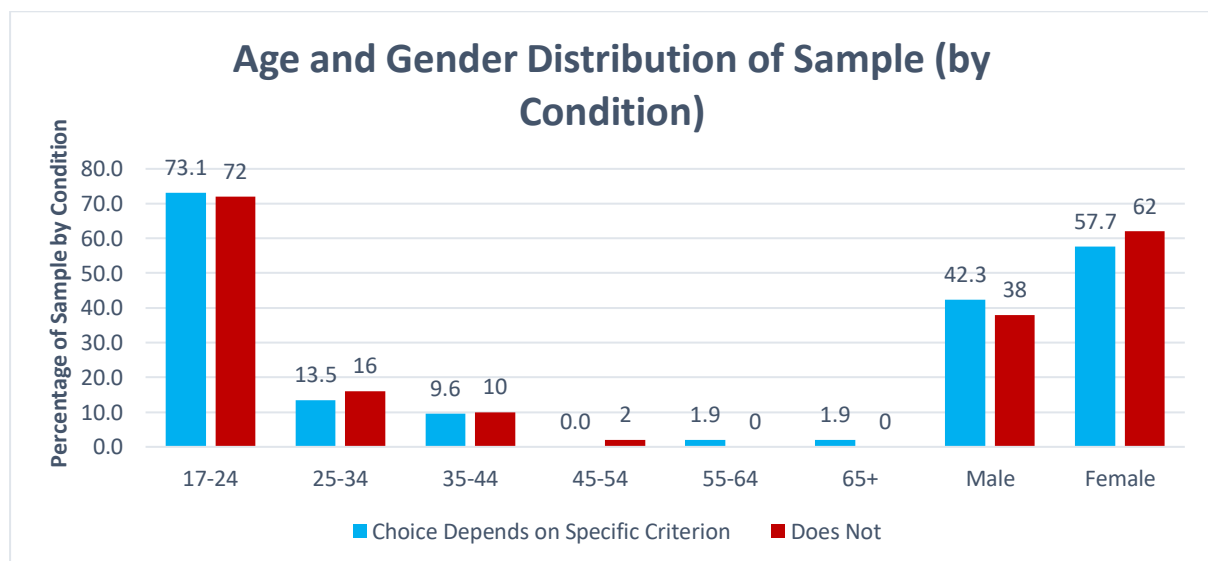
Figure 2 - Age and gender distribution of sample by condition

The first descriptive figure, Figure 2, shows the age and gender distribution of the sample by condition. The sample is, as expected, skewed towards younger age groups, whilst the gender distribution is less unbalanced but still made up primarily of females; nevertheless, age and gender characteristics are well-balanced across the two conditions. Naturally, this statement excludes age groups 45 – 54, 55 – 64 and 65+, of which there are only 3 respondents in the sample – an expected outcome given that these are outside the typical ages of university attendance.
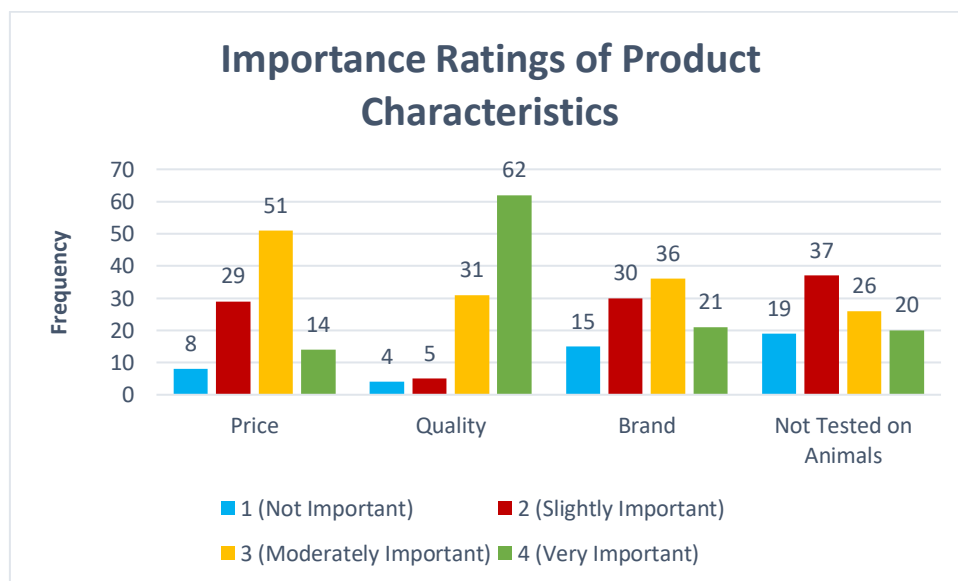
Figure 3 – Importance Ratings of Product Characteristics

Meanwhile, Figure 3 indicates that respondents give most importance to Quality followed by Price, whilst whether a product is animal tested or not tends to be given the least importance, as can be seen by a large amount of 'slightly important' and 'not important' ratings relative to other categories. This is underlined in Table 3 below, which shows that Quality is given a significantly higher average importance rating than other categories, and is the only characteristic with a modal rating of 4. Price and Brand follow, whilst whether a product is animal tested or not is given the least priority, with an average rating of 2.46, and a modal rating of 2.

Table 3 – Measures of central tendency, minimum & maximum of importance ratings

	Price	**Quality**	**Brand**	**Not Tested on Animals**
Minimum	1	1	1	1
Maximum	4	4	4	4
Average	2.70	3.48	2.62	2.46
Median	3	4	3	2
Mode	3	4	3	2

Price of shampoo product most commonly used by respondents
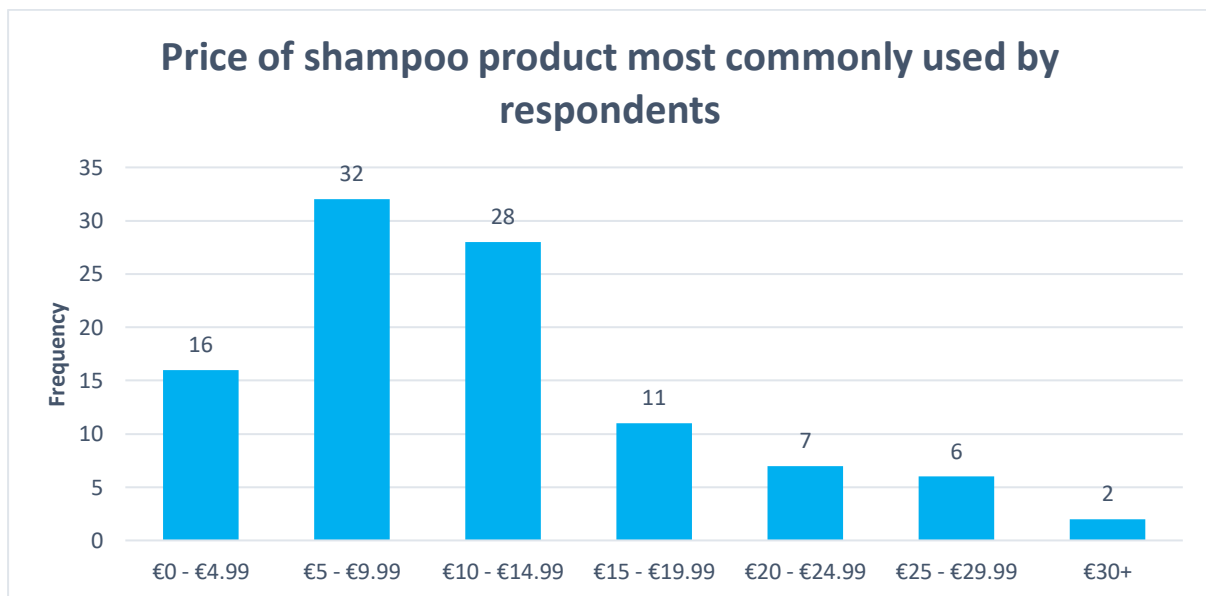
Figure 4 – Price of respondents' most commonly used shampoo product

Figure 4 shows that most respondents (76 of 102) generally spend less than €14.99 on their most commonly purchased shampoo product. This corresponds with the importance that respondents attach to price in their purchase decisions, as shown above. In fact, very few individuals spend €25 or more on shampoo in the sample collected. Additionally, as outlined in the literature, animal welfare friendly products tend to be more expensive. Hence, these factors, coupled with the low priority given to products not being animal tested, may negatively affect the likelihood of respondents opting for non-animal-tested products.
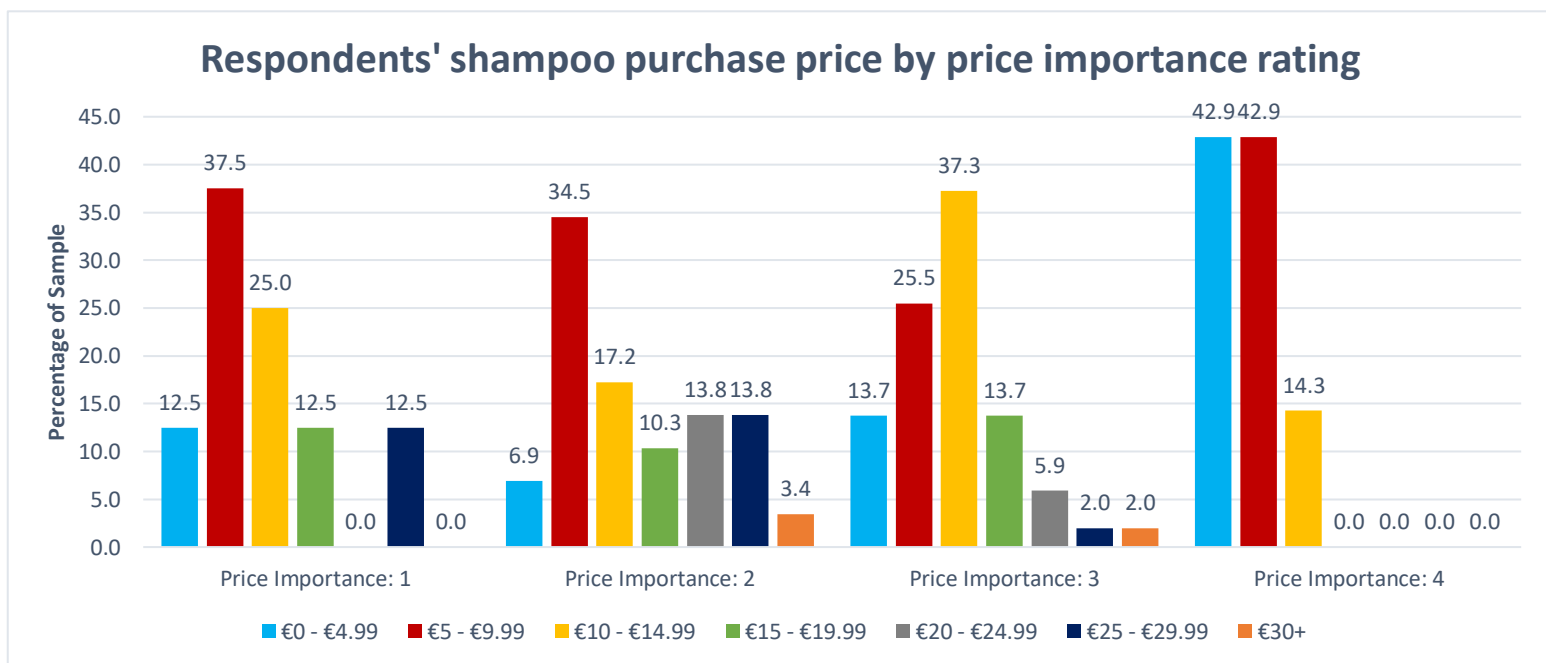
Figure 5 - Respondents' shampoo purchase price by price importance rating

Expectations of an inverse relationship between the importance given to price and respondents' actual spend are backed up by the results presented in Figure 5. This graphic clearly shows how respondents who give the highest priorities (ratings of 3 and 4) to price also tend to purchase shampoo products at the lower price ranges. Nevertheless, it is also noted how these statistics show respondents giving the lowest importance rating to price spending less than those who assigned an importance of 2 to this factor.
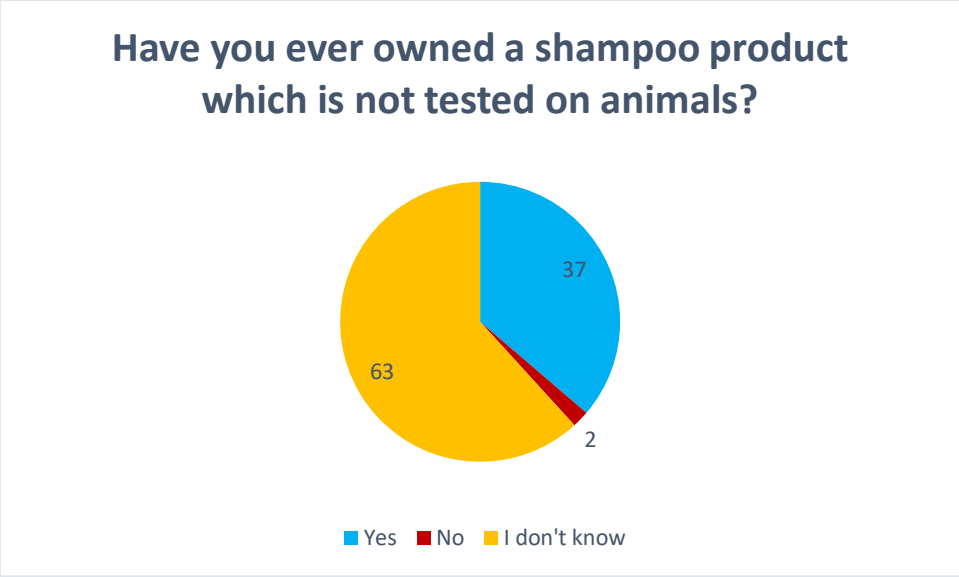
Figure 6 – Owning a non-animal tested shampoo product

Meanwhile, the majority of respondents (63) did not know whether they have ever purchased shampoo products which were not tested on animals. On the other hand, 37 respondents answered that they have owned such products, with only 2 respondents answering a definite no.
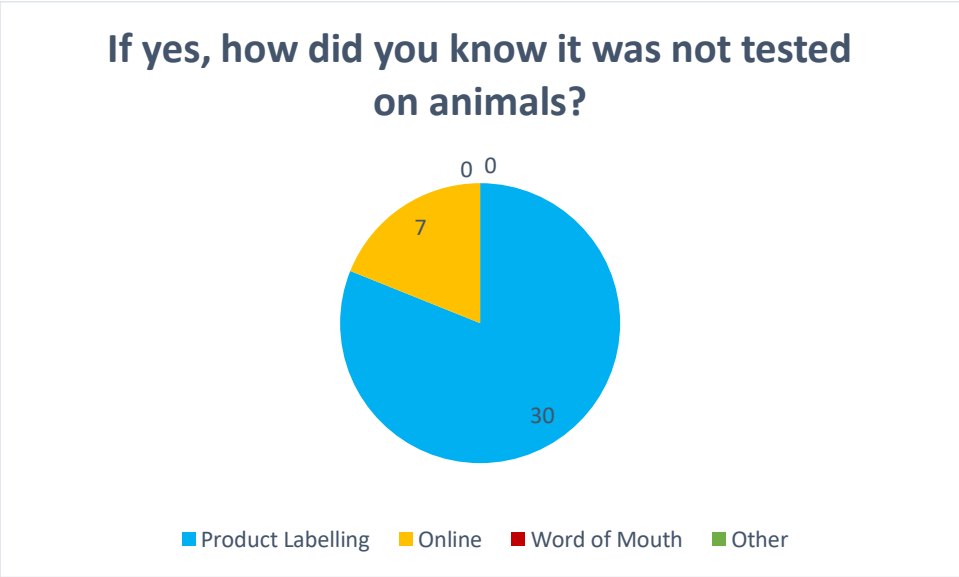
Figure 7 – Respondents' source of information on products' animal-testing status

Among the 37 respondents that answered yes to the above question, product labelling seems to be the most common source of information. Given this, and the need for further information to consumers (as clearly outlined in the literature, and evidenced by the fact that most respondents did not know whether they have purchased non-animal-tested products), this points towards labelling being a potential avenue to inform customers more clearly on this issue.
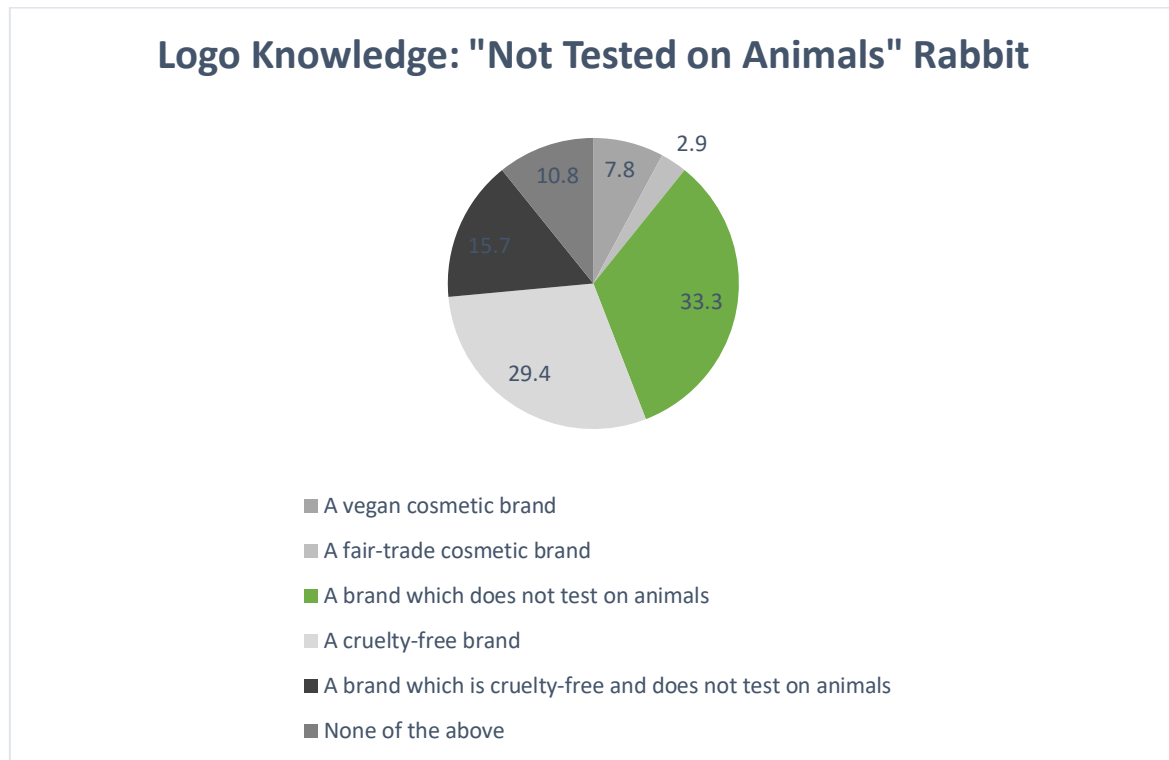
Figure 8 – Logo knowledge: "Not tested on animals" rabbit

Logo Knowledge: Cruelty Free Bunny

2.9
9.8
11.8
12.7
30.4
32.4

- A vegan cosmetic brand
- A fair-trade cosmetic brand
- A brand which does not test on animals
- A cruelty-free brand
- A brand which is cruelty-free and does not test on animals
- None of the above
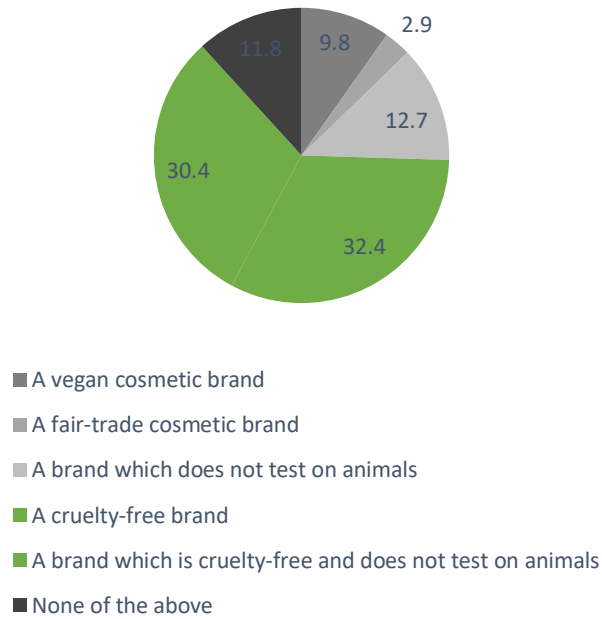
Figure 9 – Logo knowledge: Cruelty free bunny

Logo Knowledge: Leaping Bunny

6.9
13.7
11.8
19.6
33.3
14.7

- A vegan cosmetic brand
- A fair-trade cosmetic brand
- A brand which does not test on animals
- A cruelty-free brand
- A brand which is cruelty-free and does not test on animals
- None of the above
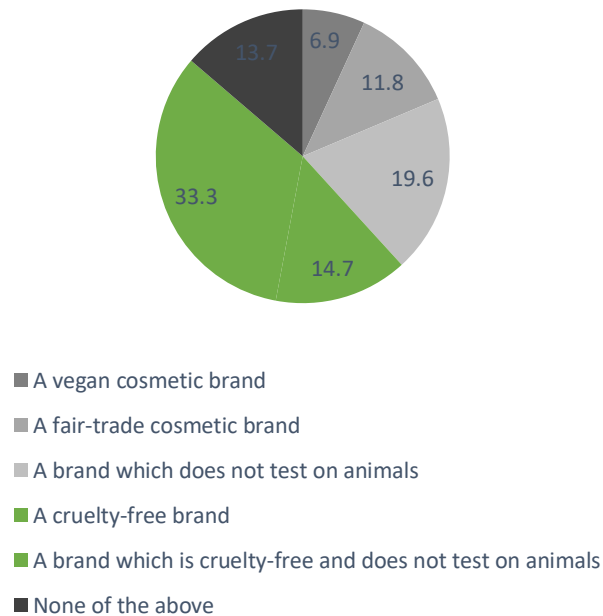
Figure 10 – Logo knowledge: Leaping bunny

Figures 8 to 10 relate to respondents' knowledge of non-animal-testing and cruelty-free logos. Results indicate that although a significant portion of respondents identified the correct meaning of the logos displayed (where the proportion of correct answers is denoted by green colouring), such knowledge is still not widespread, with over half of respondents not identifying the correct meaning of two of the three logos.

It must be noted that in the case of the latter two logos, namely those associated with the Cruelty Free Bunny and the Leaping Bunny, there was an element of overlap between two of the answer options provided to respondents, being "cruelty free" and "cruelty free and does not test on animals", with both these answers therefore deemed correct. This is since being "cruelty free" includes and goes over and above the brand not testing on animals, as explained within the Literature Review.

Would you prohibit animal research for shampoo development if you had the authority to do so?

- 14
- 15
- 73

■ Yes ■ No ■ I don't know
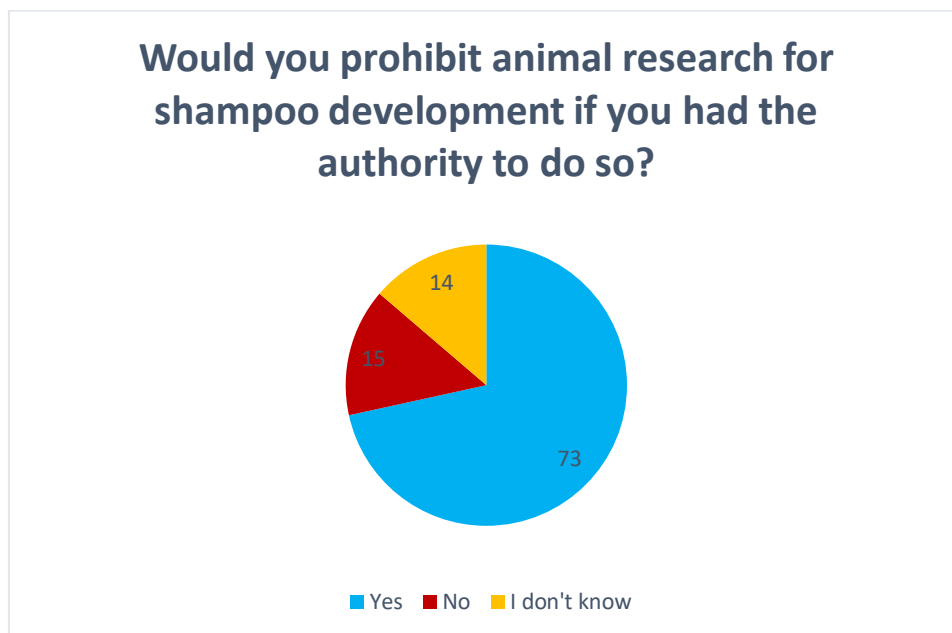
Figure 11 – Prohibiting animal research for shampoo development if in authority

The next set of questions relate to respondents' attitudes toward animal use in research and testing. When asked whether they would prohibit animal research if they had the authority to

do so, the majority of respondents (73) answered yes, with 'No' and 'I Don't Know' together making up less than a third of all responses.
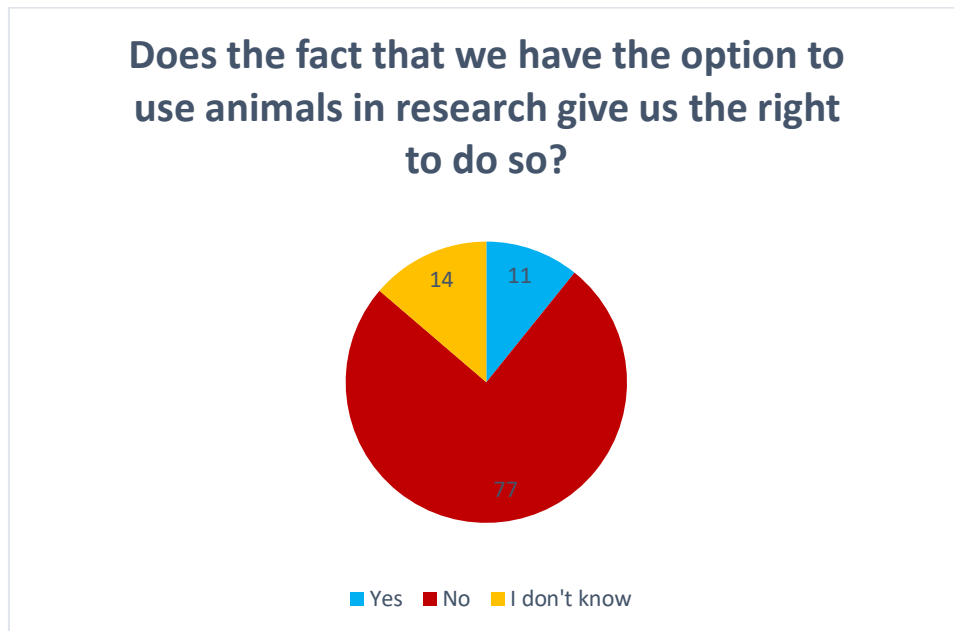
Figure 12 – Does the fact that we have the option to use animals in research gives us the right to do so?

The majority of respondents also disagree that the option to use animals in research gives us the right to do so, with only 11 respondents answering 'Yes' and the rest answering 'I don't know'. However, Figure 13 below shows that a smaller majority of respondents disagree with animal testing when the effects on the animals involved are temporary.
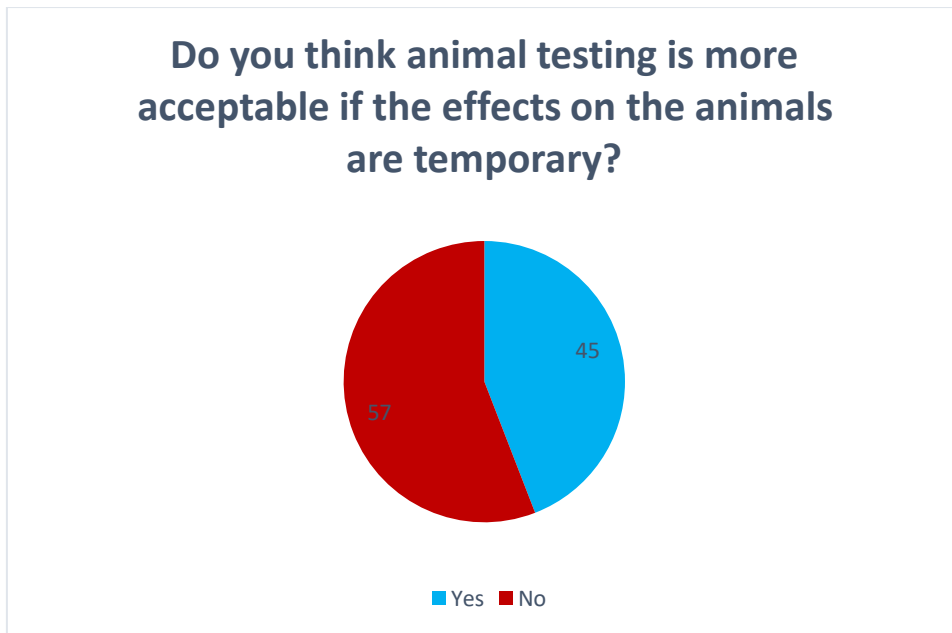
Figure 13 – Is animal testing more acceptable if the effects on the animals are temporary?
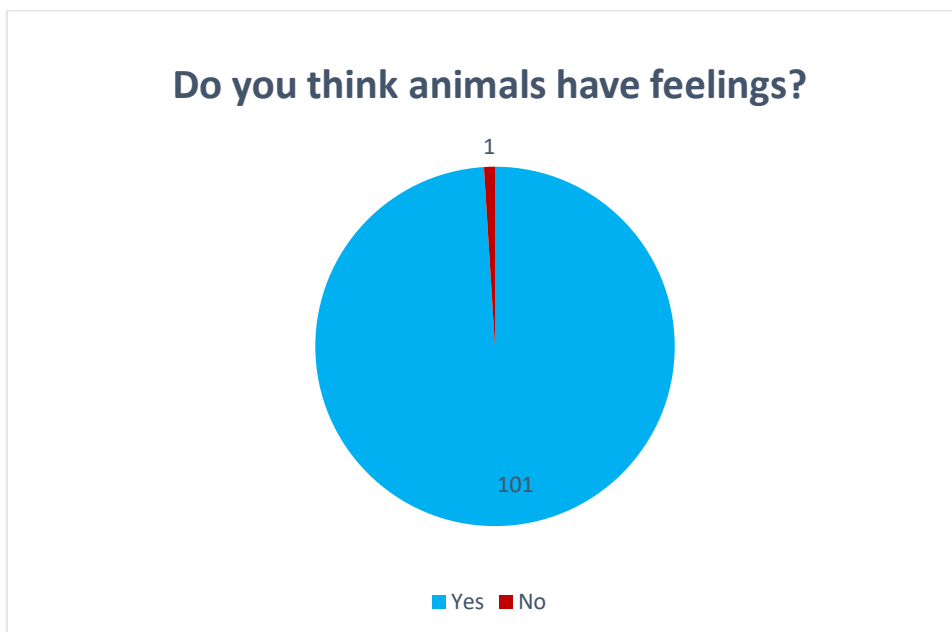
Figure 14 – Do you think animals have feelings?

The last attitudinal question asks whether respondents think that animals have feelings. In this case, only 1 person answered 'No', with all other respondents attributing feelings to animals.

The following section presents some preliminary descriptive statistics relating to the previously explained scenarios, which will be followed up by statistical analysis in the next section.
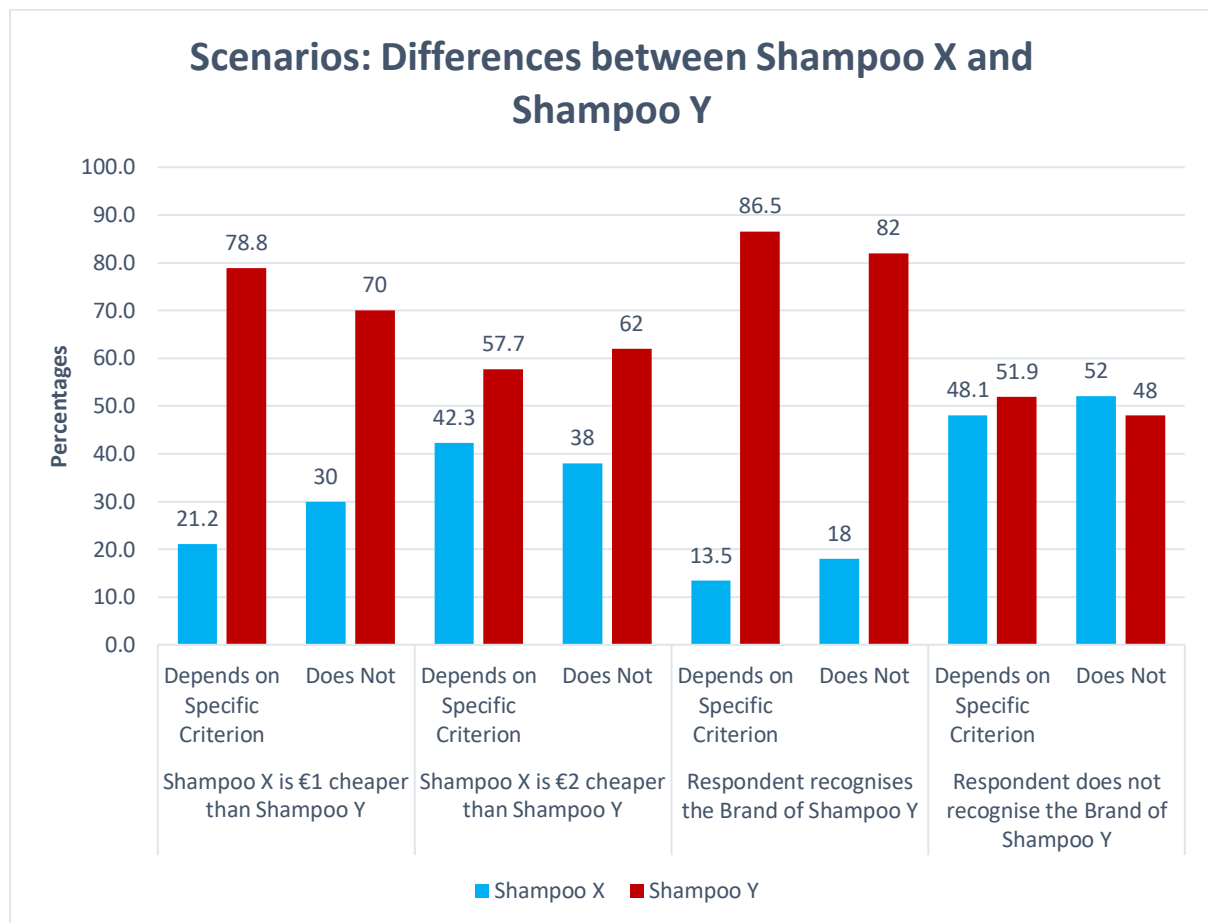
Figure 15 – Scenarios: Differences between Shampoo X and Shampoo Y

When Shampoo X is animal tested and €1 cheaper than Shampoo Y, the non-animal tested alternative, respondents are overwhelmingly likely to switch to Shampoo Y regardless of their assigned condition, with respondents with a 'dependent' scenario switching more. Most respondents also switch to Shampoo Y when it is €2 more expensive, although to a lesser extent; this is logically expected due to a larger price difference, but also hints at price sensitivity. In this case, those whose purchases do not depend on any criterion are more likely to switch than their counterparts.

In the scenario with no price difference between the products and the brand of Shampoo Y is recognisable to the respondent, a significant majority of respondents would switch to buy Shampoo Y, with those conditioned to buy dependent on a particular criterion switching more. However, when Shampoo Y's brand is not recognisable to them, most respondents with the 'does not depend' condition would not switch, with a slight majority of respondents with the opposite condition choosing the non-animal-tested alternative.

These results follow an unexpected pattern only reversed in the scenario with a €2 price differential. All else equal, one would expect that if the respondent's choice is dependent on a specific condition, s/he would be more reluctant to switch than respondents without such a constraint. Nevertheless, the latter were always found to be less likely to switch to product Y. These results therefore contradict Hypothesis 5 set earlier about the expected effect of the condition assigned. These results present further justification for the use of regression analysis to identify whether other factors may be behind these results, and to isolate the separate effects of the 'depends' or 'does not depend' conditions.
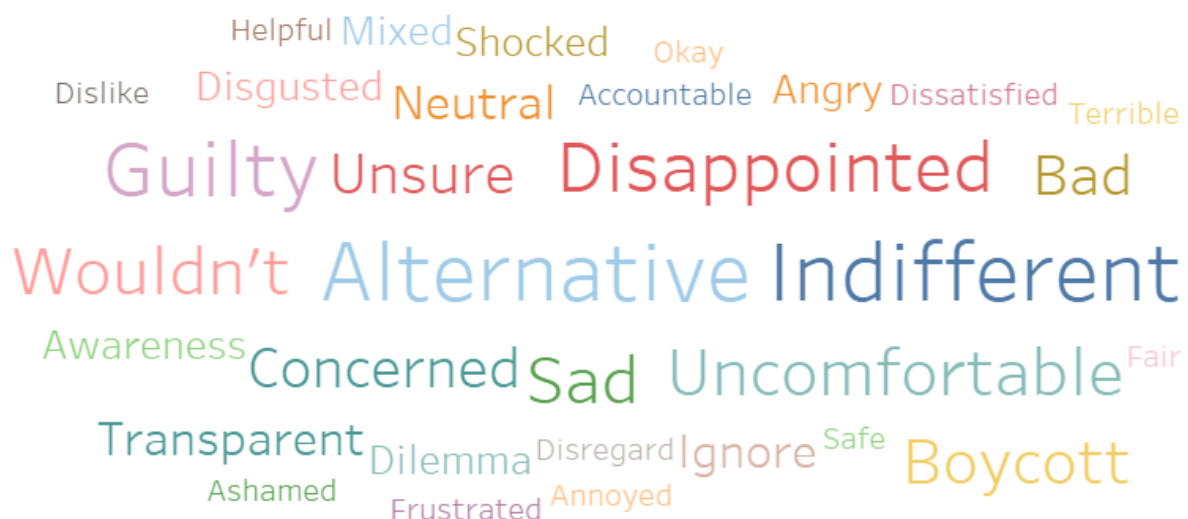
Figure 16 – Word map of feelings towards a prominent label indicating product is animal-tested

When asked how they would feel if Shampoo X had a prominent label or logo that shows it is in fact animal tested, the majority of respondents' answers had negative connotations. Figure 16 above outlines a summary of respondents' answers using keywords. The word 'wouldn't' implies that the respondent will not buy the product (without specifying whether they would opt for an alternative). Although the word 'indifferent' is mentioned repeatedly, the number of different answers reflecting negative feelings such as feeling 'bad' and 'guilty' outweigh the ones who are either 'indifferent' and 'neutral' as well as those that would 'ignore' the label.

Moreover, several respondents place priority on the quality of the product in their response. For example, one respondent mentions that she is satisfied with the Shampoo X's effectiveness and so she would be more hesitant to switch, whilst another respondent answered that she would choose an animal friendly alternative only if the quality is not compromised. Others mentioned that price, quality, and brand are more important than their feelings towards the animal-testing status of the product.
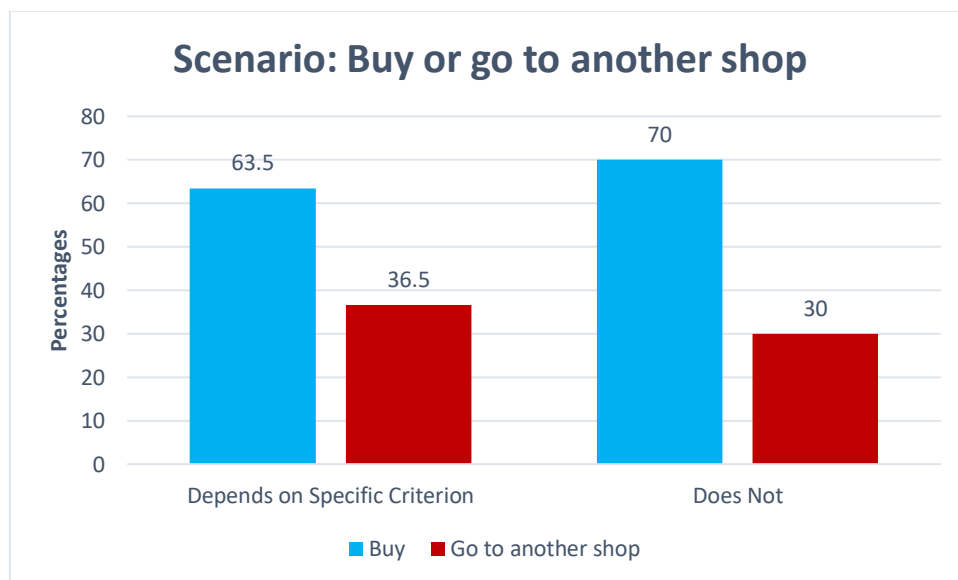
Figure 17 – Scenario: Buy or go to another shop

The last scenario asks respondents whether, in the case that all available products in a shop are animal tested, they would buy from that shop or be prepared to leave the shop in search of a

non-animal-tested product. Most respondents would still decide to buy (suggestive of an attitude-behaviour gap given respondents' attitudes being generally against animal testing), where once again, respondents with a 'depends' condition would be more prepared to search for an animal-welfare friendly product.
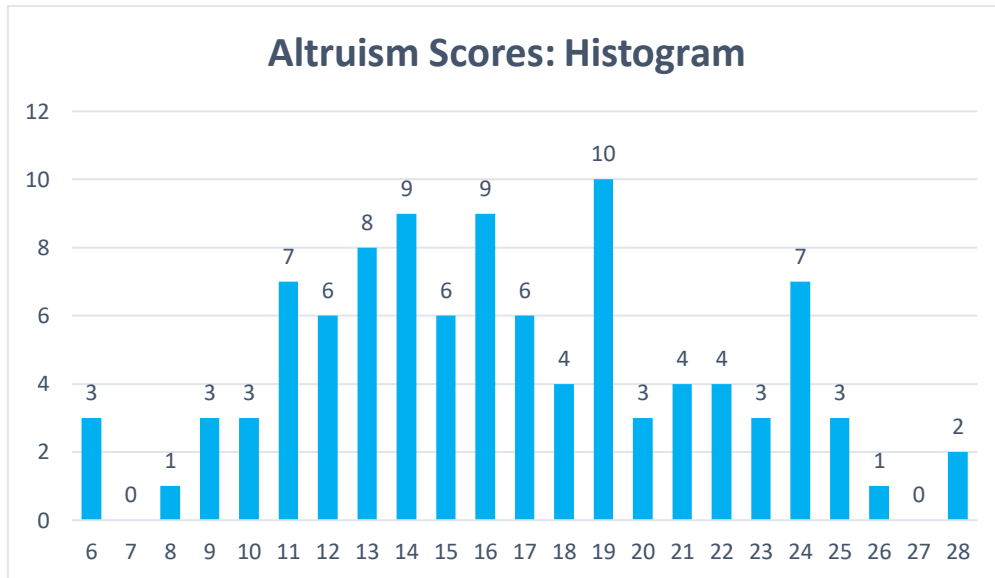
Figure 18 – Histogram of total altruism scores

Figure 18 summarises respondents' scores on the altruism scale included within the survey, where a higher total score indicates a more altruistic personality and would also be expected to be correlated with more negative attitudes on animal testing. The histogram depicts altruism scores as following an approximately normal distribution with a modal score of 19, although the shape of the distribution is not clearly traced out, most likely due to the small sample size.

Delving more into altruism, the following two figures explore the mean altruism score of different groups of respondents. Figure 19 hints at a small but recognisable difference in altruism levels by gender, as well as in responses to attitude questions regarding animal testing. Specifically, females have a slightly higher average altruism score than males, whilst respondents choosing the most 'animal-friendly' option also have higher altruism score for the three attitudinal questions analysed. It should be noted that this analysis was not conducted for

the fourth attitudinal question, 'Do you think animals have feelings?', since all but one respondent chose the same answer. In Figure 20, meanwhile, it is seen how the mean altruism score increases progressively with the importance attached to products not being tested on animals. These results hint at some positive relationship between altruism, attitudes and consumer behaviour, in line with Hypothesis 2 set earlier about the expected role of altruism, and will be further analysed through statistical tests.
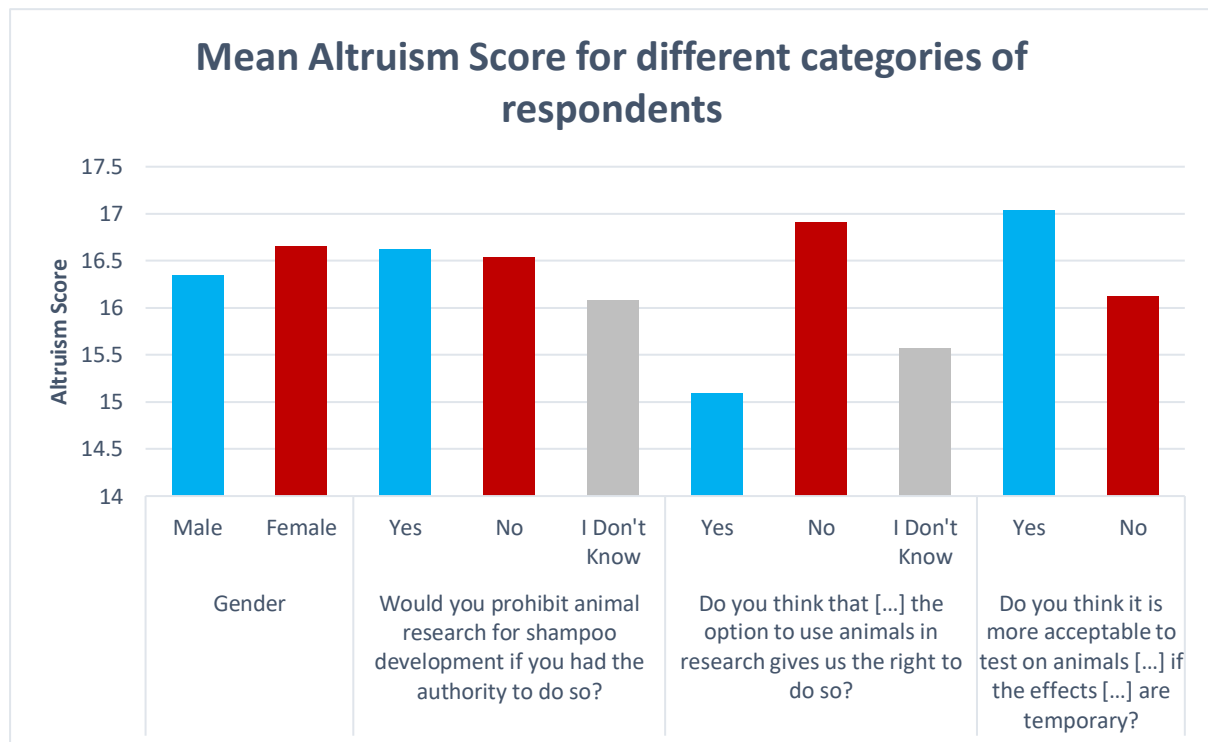
Figure 19 – Mean altruism scores for different categories of respondents
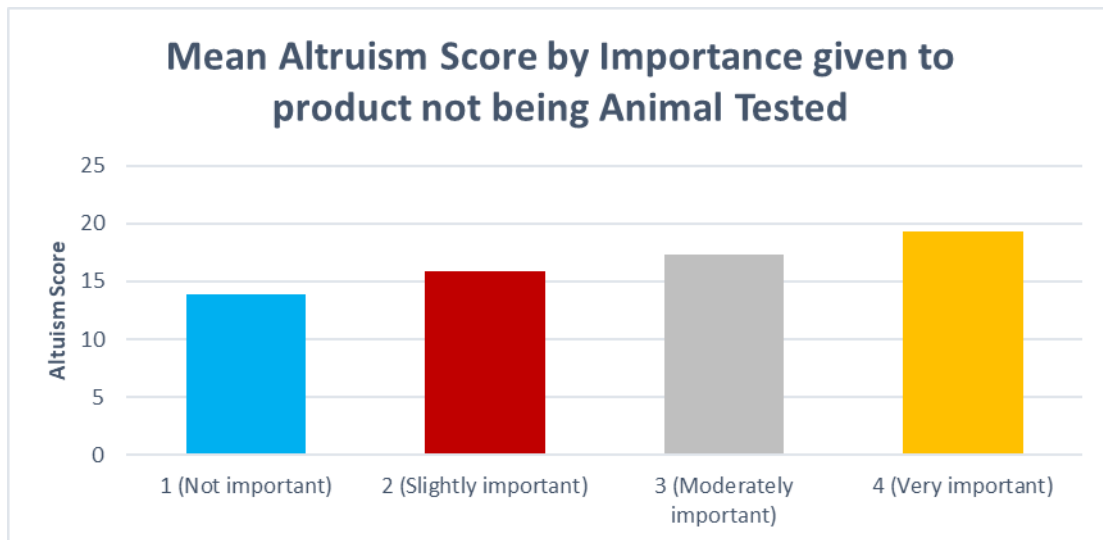
Figure 20 – Mean altruism score by importance given to product not being animal tested
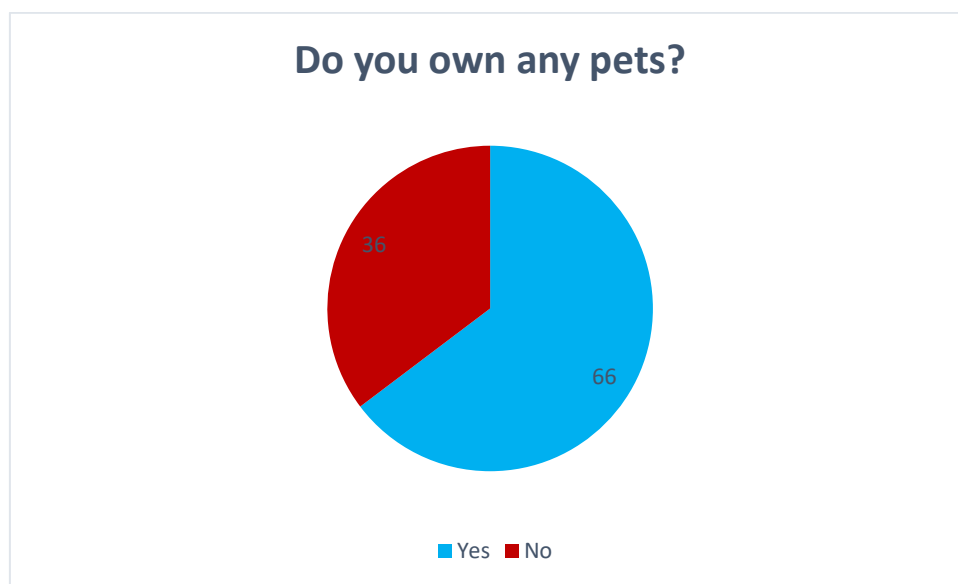
Figure 21 – Distribution of responses on question: Do you own any pets?

The last three questions serve as proxies for indicators of concern towards animal welfare, as explained earlier. In the first question, the majority of respondents (66) stated that they own pets while 36 persons answered they do not. Making reference to the literature, it is expected that owning a pet increases the likelihood of having more concern for animals' wellbeing.

Meanwhile, from Figure 22 it is evident that the majority of respondents (94/102) enjoy being in the company of animals with only 8 respondents indicating otherwise.

Figure 22 – Distribution of responses on question: Do you enjoy being in the company of animals?

Figure 23 – Distribution of responses on question: Are you a vegeterian/vegan?

The last of these indicators asks respondents whether they are vegetarian or vegan, in view of results in the literature showing that being vegan or a vegetarian is directly linked to lower acceptance of animal use in research. In this case, the majority of respondents do not follow

either a vegetarian or a vegan diet, with only 6 respondents answering that are vegetarians/vegans.

The above descriptive statistics have therefore outlined several insights and patterns present in the data. Given these preliminary indications, more detailed analysis is conducted in the next section, applying statistical tools in order to obtain a clearer picture and outline any statistical relationships that result from the data.

Statistical Analysis

Factors affecting attitudes towards animal testing

The first part of the statistical analysis involves testing for the effects of the indicators of concern for animal welfare, as well as gender and altruism, on respondents' attitudes towards animal testing. Moreover, I also test for a relationship between attitudes towards animal testing and the mean importance scores given to product characteristics of not being tested on animals. As explained in the Method chapter, Chi-Square Tests are used when testing for the effects of animal welfare concern indicators and gender, whilst t-Tests are used when testing for relationships with altruism and importance attached to animal testing.

The results of these tests are summarised in Tables 4 and 5 below, and fully reproduced in Appendix 4. Table 4 shows the results related to the effects of animal welfare concern, gender and altruism on each question relating to attitudes towards animal testing. Starting from the attitudinal indicator: 'Would you prohibit animal research for shampoo development if you had the authority to do so?', only for gender is there a statistically significant result. As shown in the relevant test result (Table 27 in Appendix 4), and following the interpretation of Babin and Zikmund (2015), since the observed value for males answering 'Yes' is lower than the expected

value, and that for females answering 'Yes' is higher, whilst the opposite is found for 'No', this indicates that female respondents are more likely to want to prohibit animal testing than males. The same is found for the next indicator – 'Do you think that the fact that we have the option to use animals in research gives us the right to do so?'. The null hypothesis of no relationship between this indicator and gender can be rejected at a 5% level of significance, with results once again indicating that females have less positive attitudes towards animal testing. The gender difference is once again found to be statistically significant for the third indicator question, being 'Do you think it is more acceptable to test on animals for scientific purposes if the effects on the animals are temporary?'. Again, as can be confirmed from Table 39 in Appendix 4, males are more inclined to find this acceptable than females. These results therefore correspond with both the literature and the expectations expressed in Hypothesis 1.

Moreover, a statistically significant association is found between the responses to the third attitudinal indicator and pet ownership. Looking at Table 36 in Appendix 4, pet owners' agreement to this statement is less than expected, and vice-versa for respondents who are not pet owners. Interestingly, in these tests, altruism not found to be related to a statistically significant difference, as with 'enjoying the company of animals' and being vegetarian/vegan.

Meanwhile, Table 5 shows the results of t-Tests carried out to test whether the mean importance rating given to non-animal-testing varies with responses to the attitudinal indicators. For the indicator, 'Would you prohibit animal research for shampoo development if you had the authority to do so?', the mean importance rating given to products not being animal tested is statistically significantly different at a 1% level of significance for respondents answering 'Yes' and 'No' in the attitudinal question, with that of 'Yes' being higher. The mean importance rating for neutral (I don't know) responses is also statistically significantly higher than those of respondents choosing 'No', whilst there is no significant difference 'Yes' vs. 'I don't know'. The exact same patterns of statistical significance are found for the attitudinal

question 'Do you think that the fact that we have the option to use animals in research gives us the right to do so?', whilst for the question 'Do you think it is more acceptable to test on animals for scientific purposes if the effects on the animals are temporary?', which only had a 'Yes' or 'No' response, it is once again observed that the mean importance rating given by those who disagree with this statement is statistically significantly higher than that of those who agree. These results therefore suggest a clear relationship between the responses to indicators of attitudes on animal testing and the importance given to a product not being tested on animals, in itself an expected result and an indicator of reliability and consistency of survey responses.

Table 4 - Tests for the effects of animal welfare indicators, gender and altruism on indicators of attitudes towards animal testing

Attitudinal Indicator	Attitudinal Indicator Responses Tested	Factor	Relevant Test	Test Statistic Value	Test Statistic Critical Value ($\alpha = 0.05$)	Test p-value	Statistically Significant? †
Would you prohibit animal research for shampoo development if you had the authority to do so?		Owns Pets	Chi-Square Test for Independence	3.9220	5.9915	0.1407	
		Enjoys company of animals	Chi-Square Test for Independence	0.7348	5.9915	0.6925	
		Vegetarian/Vegan	Chi-Square Test for Independence	1.1010	5.9915	0.5767	
		Male/Female	Chi-Square Test for Independence	5.4721	5.9915	**0.0648**	*
	'Yes' vs. 'No'	Altruism	Two-Tailed t-test	0.0566	± 1.9879	0.9550	
	'Yes' vs. 'I Don't Know'			0.3709	± 1.9883	0.7116	
	'No' vs. 'I Don't Know'			0.2380	± 2.0518	0.8137	
Do you think that the fact that we have the option to use animals in research gives us the right to do so?		Owns Pets	Chi-Square Test for Independence	1.1173	5.9915	0.5720	
		Enjoys company of animals	Chi-Square Test for Independence	0.0335	5.9915	0.9834	
		Vegetarian/Vegan	Chi-Square Test for Independence	2.0698	5.9915	0.3553	
		Male/Female	Chi-Square Test for Independence	8.5365	5.9915	**0.0140**	**
	'Yes' vs. 'No'	Altruism	Two-Tailed t-test	-1.1247	± 1.9879	0.2639	
	'Yes' vs. 'I Don't Know'			-0.2271	± 2.0687	0.8224	
	'No' vs. 'I Don't Know'			0.9018	± 1.9870	0.3696	
Do you think it is more acceptable to test on animals for scientific purposes if the effects on the animals are temporary?		Owns Pets	Chi-Square Test for Independence	4.5604	3.8415	**0.0327**	**
		Enjoys company of animals	Chi-Square Test for Independence	0.1218	3.8415	0.7271	
		Vegetarian/Vegan	Chi-Square Test for Independence	1.9485	3.8415	0.1627	
		Male/Female	Chi-Square Test for Independence	7.9027	3.8415	**0.0049**	***
	'Yes' vs. 'No'	Altruism	Two-Tailed t-test	0.9092	± 1.9840	0.3654	

*† * denotes statistical significance at a 10% level, ** at a 5% level, and *** at 1% level.*

Table 5 - Tests for relationships between attitudes on animal testing and mean importance rating given to a product not being tested on animals

Attitudinal Indicator	Attitudinal Indicator Responses Tested	Mean Importance Rating	Test Statistic Value	t-Test Statistic Critical Value (α = 0.05, two-tailed)	Test p-value	Statistically Significant? †
Would you prohibit animal research for shampoo development if you had the authority to do so?	'Yes' vs. 'No'	'Yes' = 2.6849; 'No' = 1.6	4.0353	±1.9879	**0.0001**	***
	'Yes' vs. 'I Don't Know'	'Yes' = 2.6849; 'I Don't Know' = 2.2143	1.6412	±1.9883	0.1044	
	'No' vs. 'I Don't Know'	'No' = 1.6; 'I Don't Know' = 2.2143	-2.1502	±2.0518	**0.0407**	**
Do you think that the fact that we have the option to use animals in research gives us the right to do so?	'Yes' vs. 'No'	'Yes' = 1.9091; 'No' = 2.6623	-2.4210	±1.9879	**0.0176**	**
	'Yes' vs. 'I Don't Know'	'Yes' = 1.9091; 'I Don't Know' = 1.7857	0.3185	±2.0687	0.7530	
	'No' vs. 'I Don't Know'	'No' = 2.6623; 'I Don't Know' = 1.7857	3.1908	±1.9870	**0.0020**	***
Do you think it is more acceptable to test on animals for scientific purposes if the effects on the animals are temporary?	'Yes' vs. 'No'	'Yes' = 2.1333; 'No' = 2.7193	-3.0194	±1.9840	**0.0032**	***

† * denotes statistical significance at a 10% level, ** at a 5% level, and *** at 1% level.

Which consumer groups would prioritise or trade off a product's animal testing status?

As discussed in the Method chapter, a regression is run to analyse which consumer characteristics or groups would be more or less likely to prioritise the product's animal-testing status, and thus which groups are more or less likely to trade off this product characteristic for others. The results are shown in Table 6 below.

Table 6 – Results for regression of importance rating given to product not being tested on animals

	Coefficients	Standard Error	t Stat	P-value	Regression Statistics	
Intercept	-1.438794641	1.107766776	-1.2988245	0.197397	Multiple R	0.6837426
Price	0.114667305	0.103740686	1.10532627	0.272031	R Square	0.4675039
Quality	0.295676113	0.116568282	**2.536506****	0.01296	Adjusted R Square	0.4024211
Brand	0.112829005	0.098722786	1.14288716	0.256185	Standard Error	0.7819478
Prohibit	0.641010839	0.198107177	**3.235677*****	0.001711	Observations	102
Option	-0.131580349	0.268598989	-0.4898766	0.62544		
Temporary	-0.174127226	0.195855584	-0.8890593	0.376395		
Altruism	0.051881869	0.016642591	**3.117415*****	0.002465		
Pets	-0.226706335	0.185222392	-1.2239683	0.224231		
Company	0.422009722	0.306898734	1.37507808	0.172598		
Veg	0.708767693	0.344467279	**2.057576****	0.04259		
Female	0.378595926	0.184873021	**2.04787****	0.043554		

* = statistically significant at a 10% level of significance, ** = at a 5% level, *** = at a 1% level

Results show that the variables which have a statistically significant effect on the importance that respondents assign to products not being animal-tested are the importance respondents attach to quality, whether respondents would prohibit animal testing, the respondent's altruism score, whether the respondent is vegetarian or vegan, and the respondent's gender – all of which have a positive effect on the rating. Specifically, for instance, a 1-point increase in the respondent's importance given to product quality, all other variables constant, raises the respondent's importance rating for non-animal-testing by an average of close to 0.3. In the case of *Prohibit*, which takes a value of 1 if the respondent answers 'Yes' and 0 otherwise, a

respondent's importance rating for non-animal-testing increases by an average of 0.64 if the respondent answers 'Yes' in this attitudinal indicator. Similarly, keeping all other variables constant, with a 1-point increase in the altruism level of respondents, the importance rating given to products not being animal-tested would increase by an average of 0.05, and when a respondent is vegetarian or vegan, the rating increases by around 0.71. Finally, being female, on average, increase the importance rating assigned to a shampoo product not being tested on animals by close to 0.4 relative to a male respondent.

Which consumer groups would be more likely to switch to non-animal tested alternatives in different contexts?

The subsequent analysis relates to the different scenarios presented to survey respondents, once again as explained in the Method chapter. A regression is run for each of the five scenarios presented. The first of these, presented in Table 7 below, relates to the scenario where the respondent's current product, Shampoo X, which is assumed to be animal tested, is €1 cheaper than the alternative, Shampoo Y, which is not animal-tested.

Table 7 – Regression result for Scenario 1

	Coefficients	Standard Error	t Stat	P-value	Regression Statistics	
Intercept	0.302860385	0.29884396	1.013439876	0.313628	Multiple R	0.621634
NTA	0.016961338	0.0496865	0.341367134	0.733641	R Square	0.386429
Price	-0.080582271	0.049049634	-1.642872026	0.103978	Adjusted R Square	0.295788
Quality	-0.014907718	0.057039007	-0.261360055	0.794426	Standard Error	0.367523
Brand	-0.017146426	0.046127427	-0.371718665	0.710996	Observations	102
Condition	0.143749747	0.07758965	**1.852692***	0.067278		
Prohibit	0.169688349	0.09780097	**1.735037***	0.086235		
Option	-0.233876866	0.128058361	**-1.82633***	0.071191		
Temporary	-0.101315435	0.091545075	-1.106727317	0.271428		
Altruism	0.023564228	0.008211236	**2.869754*****	0.005143		
Pets	-0.10809957	0.086980831	-1.242797621	0.217244		
Company	0.155640732	0.146668816	1.061171255	0.291516		
Veg	-0.041789127	0.169455769	-0.246607874	0.805786		
Female	0.220336706	0.086167394	**2.557078****	0.012269		

* = statistically significant at a 10% level of significance, ** = at a 5% level, *** = at a 1% level

The result indicates that female respondents and those having higher altruism scores are more likely to switch to the non-animal-tested alternative. Attitudinal factors also prove to be significant predictors of whether a respondent would switch to Shampoo Y. Namely, those who agree with the statement that having the option to use animals for testing gives a right to do so, thus indicating a negative attitude towards animal testing, are statistically significantly less likely (as expected) to switch to Shampoo Y, whilst those who would choose to prohibit animal testing are more likely to switch. Meanwhile, contrary to expectations, those assigned the condition wherein their shampoo choice depends on a specific criterion were more likely to switch to Shampoo Y. Apart from this latter finding, the other results are consistent with logical expectations, as well as with literature in the case of more altruistic respondents, females and attitudes.

Table 8 – Regression result for scenario 2

	Coefficients	Standard Error	t Stat	P-value	Regression Statistics	
Intercept	-0.0726136	0.313462871	-0.23164976	0.817348	Multiple R	0.68311
NTA	0.082589959	0.052117074	1.5847006	0.116622	R Square	0.466639
Price	-0.095987022	0.051449054	**-1.865671***	0.065419	Adjusted R Square	0.387847
Quality	0.027720401	0.059829253	0.4633252	0.644275	Standard Error	0.385501
Brand	-0.111264288	0.048383898	**-2.299614****	0.023837	Observations	102
Condition	0.042433734	0.081385197	0.52139376	0.603402		
Prohibit	0.221042766	0.102585218	**2.154723****	0.033915		
Option	-0.173738494	0.134322746	-1.29344061	0.199244		
Temporary	-0.100771487	0.096023296	-1.04944832	0.296845		
Altruism	0.025433385	0.008612915	**2.952936*****	0.004036		
Pets	0.305570015	0.091235778	**3.349235*****	0.001195		
Company	0.096592149	0.153843592	0.62785942	0.531722		
Veg	0.134910859	0.177745242	0.75901249	0.449873		
Female	0.145844479	0.090382549	1.61363538	0.110187		

* = statistically significant at a 10% level of significance, ** = at a 5% level, *** = at a 1% level

Meanwhile, Table 8 above relates to the scenario where Shampoo X is €2 cheaper than Shampoo Y. Once again, more altruistic respondents are more likely to make the more pro-animal-welfare choice, and the attitudinal indicator *Prohibit* is also statistically significant. However, all other statistically significant variables in this scenario are different from those in the previous scenario. Notably, the importance rating given to price (*Price*) is now statistically significant, with respondents who give more importance to the price of a product being statistically significantly less likely to switch to Shampoo Y, which is plausible since this alternative is now relatively more expensive. Those who give more importance to brand are also less likely to switch – once again, it is plausible in terms of a larger price difference that a respondent would be more likely to stick to their current brand. Lastly, in this case, pet owners are statistically significantly more likely to switch to shampoo Y. As outlined earlier, this is an expected result, with pet owners expected to be more sympathetic with animal-welfare issues.

The two regressions that follow relate to two scenarios with no price difference, where in the first scenario respondents assume that the brand of the non-animal-tested Shampoo Y is

recognisable to them, whilst they are to assume the contrary in the subsequent scenario. Table 9 below reports the results relating to the scenario where respondents recognise Shampoo Y's brand, where only two variables turn out to be statistically significant. In this case, it results that respondents who prioritise the product's brand more are less likely to switch, indicating that people who prioritise their product's brand would still be more likely to stick with their current product, even if they recognise the brand of the alternative. Meanwhile, the attitudinal indicator *Option* being statistically significant in this case signifies that respondents with attitudes that do not oppose animal testing are less likely to switch to the non-animal-tested product in this scenario.

Table 9 – Regression result for Scenario 3

	Coefficients	Standard Error	t Stat	P-value	Regression Statistics	
Intercept	0.624757548	0.274003286	2.28010969	0.025018	Multiple R	0.509192
NTA	0.043730103	0.045556431	0.95991066	0.3397302	R Square	0.259277
Price	-0.023483873	0.044972503	-0.52218293	0.602855	Adjusted R Square	0.149852
Quality	0.024444504	0.052297779	0.46740999	0.6413619	Standard Error	0.336973
Brand	-0.078723985	0.042293198	**-1.861386***	0.0660281	Observations	102
Condition	0.106861512	0.0711402	1.50212554	0.1366447		
Prohibit	0.071166425	0.089671503	0.7936348	0.4295429		
Option	-0.370230571	0.117413822	**-3.153211***	0.0022091		
Temporary	0.018763411	0.083935614	0.22354529	0.8236293		
Altruism	0.007051775	0.007528697	0.93665279	0.3515006		
Pets	-0.100817579	0.079750762	-1.26415819	0.2095115		
Company	0.165780297	0.134477329	1.23277506	0.2209429		
Veg	0.028023849	0.155370173	0.18036827	0.8572782		
Female	0.030394316	0.07900494	0.38471412	0.7013774		

* = statistically significant at a 10% level of significance, ** = at a 5% level, *** = at a 1% level

Table 10 – Regression result for Scenario 4

	Coefficients	Standard Error	t Stat	P-value	Regression Statistics	
Intercept	-0.190326389	0.380445848	-0.500272	0.61813239	Multiple R	0.49451581
NTA	0.078140825	0.063253822	1.2353534	0.219986931	R Square	0.24454589
Price	-0.056435244	0.062443054	-0.903787	0.368575643	Adjusted R Square	0.13294471
Quality	0.059086647	0.072613994	0.8137088	0.418008094	Standard Error	0.46787819
Brand	-0.09834188	0.058722914	**-1.674676***	0.097548212	Observations	102
Condition	0.060610563	0.098776165	0.6136153	0.541052498		
Prohibit	0.201937228	0.124506357	1.6219029	0.108401719		
Option	0.055108542	0.163025786	0.3380357	0.736141362		
Temporary	-0.004187981	0.116542237	-0.035935	0.971415335		
Altruism	0.020230141	0.010453384	**1.935272***	0.056168209		
Pets	-0.134498328	0.110731688	-1.214633	0.227755446		
Company	0.310782988	0.186717985	**1.664451***	0.099579217		
Veg	0.3485457	0.21572711	1.6156787	0.109743551		
Female	-0.045909263	0.109696135	-0.418513	0.676591691		

*= statistically significant at a 10% level of significance, ** = at a 5% level, *** = at a 1% level*

Meanwhile, when the scenario shifts to one where respondents do not recognise Shampoo Y's brand, altruism levels are once again significant indicators of a switch towards the non-animal tested alternative. Brand importance is also statistically significant and with a negative effect, as can be plausibly expected in a scenario where the brand of the alternative is not recognised. Lastly, respondents who indicate that they 'enjoy the company of animals' ($Company$), which is an indicator of concern for animal welfare, are also statistically significantly more likely to switch to Shampoo Y in this case.

The last of the five scenarios presented to respondents was whether they would buy a non-animal-tested product if there is no alternative in a shop they visit, or else leave the shop in search for an alternative. The results of the relevant regression are shown below. Altruism is once again statistically significant, with more altruistic respondents likelier to indicate they would search for a non-animal-tested alternative. Plausibly, the same results for respondents with a higher importance rating for NTA. Meanwhile, the attitudinal indicator $Temporary$, which takes a value of 1 if the respondent agrees that animal testing is more acceptable when effects on animals are temporary, is statistically significantly linked to a lower probability of a

respondent searching for an alternative. Lastly, pet ownership significantly predicts a higher

likelihood that a respondent chooses to search for an alternative.

Table 11 – Regression result for Scenario 5

	Coefficients	Standard Error	t Stat	P-value	Regression Statistics	
Intercept	-0.705833756	0.320275247	-2.203835	0.030146311	Multiple R	0.63062492
NTA	0.129798776	0.053249716	**2.437549****	0.01679897	R Square	0.39768779
Price	0.022600899	0.052567178	0.4299432	0.66828799	Adjusted R Square	0.30870985
Quality	0.060818962	0.061129501	0.99492	0.32250309	Standard Error	0.39387945
Brand	-0.032425406	0.049435408	-0.655915	0.513590375	Observations	102
Condition	0.131009836	0.083153912	1.5755102	0.118727145		
Prohibit	-0.047730031	0.104814666	-0.455375	0.649960712		
Option	0.032256599	0.137241934	0.2350346	0.814727951		
Temporary	-0.2526568	0.098110136	**-2.575236****	0.011686441		
Altruism	0.016657658	0.008800096	**1.892895***	0.061658722		
Pets	0.162843139	0.093218572	**1.746896***	0.084144351		
Company	0.162443371	0.157187019	1.0334401	0.304229741		
Veg	0.19011076	0.181608116	1.0468186	0.298050018		
Female	0.110007715	0.0923468	1.1912456	0.236760291		

* = statistically significant at a 10% level of significance, ** = at a 5% level, *** = at a 1% level

Chapter 5 - Discussion

Summary of Findings and Interpretation

This section presents the most salient points from the results presented in the preceding chapter. The first point of note is that most respondents seem to give most importance to quality followed by price and brand, whilst whether a product is animal tested or not is given the least priority. This immediately corresponds with findings in the literature, which state that animal-testing status is commonly given less priority than other factors. Moreover, most respondents do not know whether the products they purchase are animal-tested, but for those who do, product labelling is the main source of such information, indicating the potential for a greater presence of labelling to inform consumers about products' animal-testing status. On this front, results also indicate that presently, consumers do not have considerable knowledge of the meaning of non-animal-tested or cruelty-free logos, indicating the need for more awareness. This is also consistent with the prevailing lack of information on ethical products often highlighted in the literature.

With regards to attitudes, results show that respondents generally exhibited views and attitudes which were not supportive of animal testing. Applying statistical tests, these indicate that there is a clear difference in attitudes towards animal testing between males and females, with female respondents opposing animal testing more than males. Altruism and the indicators of concern for animal welfare were not found to significantly predict respondents' attitudes, bar one significant result where pet owners were less likely to agree that animal testing is more acceptable if effects are temporary, although descriptive statistics show that those with attitudes opposing animal testing tend to have higher average altruism scores. As highlighted in the previous chapter, attitudes towards animal testing are also positively related to the priority given to products' animal-testing status. The result on females having less favourable attitudes about animal testing is expected given findings from the literature (e.g. Harper, Henson 2001,

Swami, Furnham et al. 2008). These findings on attitudes are also an important step in generating insights about which consumer groups could be more likely to opt for non-animal tested products.

In fact, moving on to regression analysis, it can also be observed how in each regression, at least one of the indicators of attitudes towards animal testing is found to be statistically significant. For instance, in the regression related to the importance assigned to animal testing status, the attitudinal indicator *Prohibit* is a statistically significantly positive predictor. This regression also finds that females and respondents who are vegetarian or vegan (once again consistent with the literature, e.g. Hagelin, Carlsson et al. 2003) give more priority to products not being tested on animals, whilst more altruistic respondents are also likelier to prioritise the animal-testing status.

Meanwhile, as commented above, at least one attitudinal indicator is found to be significant for each of the scenario regressions. Moreover, in the four of the five scenarios, altruism is found to be a statistically significant determinant of whether the respondent switches to Shampoo Y. Although studies reviewed on altruism do not consider the case of animal testing, Paek and Nelson (2009) and Vilela and Nelson (2006) suggest that higher altruism predicts choices of more ethical products or companies. In three of the scenarios, indicators of concern for animal welfare are also found to be significant, also underlining the importance of these factors. In two of these cases, pet owners were found to be more likely to switch to Shampoo Y; this is also considered plausible, in light of findings from the literature.

In contrast, in three different scenarios, importance given to Brand is negatively related to the probability of switching. Moreover, *Price* is found to be statistically significant and negative in the scenario with a higher price difference, signifying that the more respondents prioritise price, the less they are willing to switch with a higher price premium. These findings accord

with studies surveyed, particularly in the case of price sensitivity. Lastly, the experimental variable $Condition$ was only statistically significant once, and with a sign which is opposite to expectations, as respondents with specific purchase requirements would have been expected to be less likely to switch; thus, one cannot conclude from this study that respondents with specific needs would be less open to switching to non-animal-tested products, all else equal.

Considering the key variables previously outlined, Table 12 below relates results for these variables to the hypotheses set out for these variables, and to findings from the literature which relate to them, for ease of reference. However, it is felt that the case of attitudes is worth highlighting. As explained above, attitudinal indicators are found to positively affect the probability of switching to the non-animal-tested choice in all of the regressions estimated, supporting Hypothesis 6. However, it must be highlighted that animal testing status is given the lowest priority by respondents, despite the attitudinal questions registering a large majority of responses which oppose animal testing. In the case of the last scenario, the proportion of respondents who choose to search for an alternative in another shop is significantly lower than the other scenarios, a proportion which also contrasts with the proportions reported in attitudinal questions. This may be due to the inconvenience associated with changing shops – where convenience is found to be prioritised over ethical considerations by Papaoikonomou, Ryan et al. (2010) – but this and the findings related to the priority given to animal-testing status as discussed above may also suggest an attitude-behaviour gap.

Table 12 - Summary of findings in relation to the literature and hypotheses set

Factor	Result in relation to Literature	Result in relation to Hypothesis
Gender	Findings that females accept animal testing significantly less than males are consistent with the literature.	The result that females exhibit less favourable attitudes towards animal testing than males is clearly consistent

		with the relevant hypothesis (Hypothesis 1). However, females are not consistently found to switch to the alternative statistically significantly more than males.
Altruism	Studies available in the literature link altruism to favouring ethical business practices, but no studies were found linking it specifically to animal welfare or animal testing, and related attitudes and consumer behaviour. However, results showing that altruism predicts higher likelihood of switching can be considered consistent with the above.	Altruism was not found to statistically significantly predict attitudes favouring animal-friendly products, but as discussed, was consistently found to significantly predict a higher probability of switching.
Price Sensitivity	Respondents exhibit price sensitivity, consistent with findings in the literature previously outlined.	Both descriptive and statistical tests point towards price sensitivity, in line with Hypothesis 3.
Concern for Animal Welfare	Focusing on pet ownership, this factor is found to affect attitudes and behaviour intentions in different statistical tests in line with expectations from the literature.	Once again focusing on pet ownership, it is found to be statistically significant in some tests, both in case of attitudes and in scenario regressions, thus results mostly correspond to Hypothesis 4.
Specific Conditions	No studies in the literature were found to consider this factor.	As previously explained, this variable was only found to be statistically significant in one of the scenarios, and

		with a sign which is opposite to expectations. Therefore, this can be considered to contradict expectations laid out in Hypothesis 5.
Attitudes	Attitudinal factors which oppose animal testing and prioritise animal welfare are found to positively affect the probability of choosing non-animal-tested products, although as explained, some results also hint at an attitude-behaviour gap.	As explained above, regression results obtained for attitudes are consistent with Hypothesis 6.

Therefore, a substantial number of findings have emanated from this study, with many being consistent with expectations and, where applicable and as highlighted at different stages, with the literature. As elaborated below, these results also lend themselves to tangible implications for marketers.

Marketing Implications

As consumers are increasingly looking to connect with companies and brands that align with their own personal values, in this case specifically with regards to safeguarding animal welfare (Trudel, Cotte 2009), companies producing and selling ethical products to satisfy the demands of these consumers have the opportunity to carve out a competitive advantage. However, to do this successfully, companies must be aware of consumer behaviour regarding purchases of animal-friendly products (Mombeini, Sha'abani et al. 2015).

Firstly, results in this study have shown that most respondents do not know if the product they purchase is animal tested or not, and for those who know, labelling is found to be the most common source of information. Moreover, in some cases where respondents were asked about the meaning of common animal testing logos, only a minority correctly identified the meaning of the logo. This corresponds to studies in the literature emphasising consumers' lack of information, and indicates the importance of clear and uniform labelling which is widely communicated, to market these products more successfully. In this process, such labels would also serve as a means for marketers to boost sales by differentiating the products in question (Horne 2009).

As discussed, a common issue which hinders the purchasing of cruelty-free products among those who wish to do so is the price mark-up often found in such products (Toma, Stott et al. 2012). In fact, price sensitivity is apparent both in the descriptive statistics as well as the regression results. When there is a larger price difference between Shampoo X and its cruelty-free alternative Shampoo Y, consumers are less willing to switch, and the importance attached to price has a statistically significantly negative effect on switching probability. In order to balance this out, the benefits of buying cruelty-free need to be more clearly communicated to consumers at large by effective marketing methods so that more customers would be willing to switch to non-animal-tested product alternatives. In the longer term, the larger the demand for cruelty-free products, the more efforts companies put to rethink how they do business and satisfy this demand, which accelerates the proliferation of alternatives to animal-tested products. Naturally, stiffer competition between brands and companies would also be expected to erode this price premium. Meanwhile, Kim and Chung (2011) state that retailers could also try and change customers' perceptions of higher prices to affordable prices using marketing strategies such as discounts, advertising and new product development.

Results obtained in this study also indicate that the more altruistic a person is, the more likely s/he is to switch to a non-animal tested shampoo product. Furthermore, since the majority of respondents answered that they associate animal tested products with negative feelings such as guilt and sadness, as shown in the word cloud in Figure 16, companies and marketers could direct product advertising towards an emotional appeal. This attempts to evoke strong emotions among viewers, leads them to reconsider their perspective and spur action (Oetting 2019). What is also noticeable is that there is a statistically significant result for gender in all tests relating to the attitudinal indicators as well as in the regression pertaining to the first scenario. This is consistent with the literature, as previously highlighted. Thus, based on the results of this study, females are another group towards which companies can focus strategies and direct more targeting campaigns.

Furthermore, results emerging from the study also underline the importance of brand loyalty. In fact, the variable $Brand$ is statistically significant in 3 regression tests, in the sense that the higher the importance respondents attach to brand, the less likely they are to switch to the non-animal-tested alternative. Moreover, descriptive results show that when consumers recognise the brand of a cruelty-free alternative, they are by far more likely to switch, irrespective of whether their choice depends on a specific criterion or not. This, amongst others, highlights the opportunities available to popular existing brands like Pantene and Joico who currently test on animals, as if such large brands increasingly make the switch to becoming a cruelty-free brand and come up with new cruelty-free products in the market, customers will be likelier to switch to cruelty-free shampoo products.

Lastly, pet owners are another category of consumers which results to be relatively more disposed to switching to non-animal-tested alternatives, and which can be targeted with specific marketing strategies. In this case, marketers promoting cruelty-free products can, for example, display an advert in the pet section of a supermarket or using paid social media advertising,

which poses to these consumers the question as to why they prioritise the well-being of their own pets but purchase products which are tested on other animals. In such cases, targeted adverts would be the stimulus which leads customers to heightened attention and to potentially become customers of cruelty-free products.

Limitations

As previously explained, the survey used for this study was distributed online via the University of Malta's eSims platform. Online surveys have several advantages such as being low in cost, allowing more control over the format, and having greater efficiency in data entry and collection (Granello, Wheaton 2004). However, online surveys also bring forth several disadvantages.

One such disadvantage is hypothetical bias, which arises as respondents know that when answering the survey, they do not have to back up their answers in real life with actual behaviour (Hensher 2010). Furthermore, other issues which can potentially affect data collection and cause inconsistency in the results from online surveys include careless response and attrition (Ward, Meade et al. 2017). Careless response implies respondents "completing the survey in a manner that does not accurately reflect their true sentiments" (Ward, Meade et al. 2017 p.417). Careless response is expected and cannot be eliminated altogether, especially since no compensation was given to the respondents for participating in the survey. Meanwhile, attrition refers to when respondents opt out or leave before completing the survey. This can cause a loss in the sample size and may disrupt the sample of respondents.

Another limitation encountered was that, since respondents were answering the survey on their own time and without the researcher's supervision, upon answering the set of questions relating

to knowledge on cruelty-free related logos, they had the option to research unfamiliar definitions before answering. This increases the rate of familiarity with the meanings of logos and alter the overall results from the data.

Moreover, this study makes use of a small sample size. A smaller sample size naturally reduces the statistical power of the survey, relative to one with a larger sample size. Finally, the study does not use probabilistic sampling, which may potentially affect the validity and the accuracy to which results reflect the whole target population. As a consequence, the sample is not representative of the target population. This factor can also result in some imbalances in the sample, as can be evidenced, for example, by the small but noticeable difference between the number of male and female respondents. Ideally, the proportion of each would correspond to the proportion in the population to obtain a truly representative sample, but such differences are expected due to sampling, time and financial limitations. Thus, caution must be applied in generalising the results obtained from the sample onto the population.

Ethical Issues

As participants were clearly informed before answering the survey, all efforts were made to safeguard privacy, confidentiality, and anonymity. Respondents were firstly informed that they cannot be identified in any way and that I would not be collecting any information that could allow such identification. They were also notified that the data collected would remain anonymous and would be protected against unauthorised access, being accessible only by myself and the research supervisor. Furthermore, the responses gathered will be used for no other purposes apart from that of extracting results for this research. Finally, respondents were informed that they were entirely voluntarily participating in the survey, and that should they

for any reason not want their responses to be recorded and shared with the researcher, they could either terminate the survey session or else choose to opt-out at the end of the survey.

Possibilities for Future Research

There is a relative scarcity of studies about consumer behaviour and attitudes regarding animal testing in the literature, more so in the context of Malta. This presents substantial opportunities for future research. Naturally, a first step could be a replication of the current study with a larger sample size for greater representativeness, or studies focusing on particular segments of the population, as well as possibly taking into consideration the whole Maltese population.

Future research can also focus on specific aspects of the wider question of consumer behaviour with regards to animal testing and its interaction with attitudes. For instance, the present study obtains results that suggest the presence of an attitude behaviour gap, in line with studies in the literature, as previously outlined. Thus, future studies can delve deeper into the relationship between attitudes and actual purchase behaviour of consumer, assessing attitudes and observing customers in a field study in an actual purchasing environment. Alternatively, future studies can utilise an experimental design by creating a simulation and alternating the dependent variable, in this case the products available to the participant and recording their reactions, feelings and behaviours. Studies can also be carried out for other factors such as labelling, for example by showing different variations of product labelling, such as hiding and enlarging logos regarding animal testing and observing the importance and relevance of product labelling. Further insights can be obtained by focusing studies specifically on attitudes and behaviour by other characteristics, such as education and income, or by considering the effectiveness of advertisements on different media and with varying messages.

Lastly, this type of study can also be used in the context of other animal-tested products such as make-up products and other cosmetics, as well as for other concepts such as environmentally-friendly products or organic food products amongst others. This would therefore yield insights about consumer behaviour as well as which groups to target and which groups need greater awareness to become potential consumers in the case of these different products.

Chapter 6 - Conclusion

This study has sought to analyse the factors that affect consumers' attitudes towards animal testing and animal-tested products, and their decisions on whether or not to switch to non-animal-tested alternatives, as expressed in the research questions posed at the beginning of the study, considering the particular case of shampoo products as a repeat consumer purchase. Amongst others, the study has assessed how consumers' level of altruism interacts with attitudes and purchase behaviour relating to animal-tested products, the impact of price, quality and brand importance on purchasing decisions, and whether consumers would be more or less willing to switch to a non-animal tested alternatives depending on whether they have specific purchase requirements. It has also considered the impacts of a number of factors such as gender and pet ownership, which are commonly found to affect attitudes in the literature, as well as the effects of altruism and of attitudes themselves on purchase decisions.

Several descriptive and statistical tests were carried out to be able to obtain results which yield insights in answering the research questions pertaining to this study, the most salient of which are summarised herein. Firstly, respondents prioritise price, quality and brand over the animal tested status of a product, despite a majority expressing negative attitudes towards animal testing. Using statistical tests, it has been found that females are statistically significantly more likely to exhibit attitudes which do not favour animal testing. Females are also significantly more likely to give more importance to animal-testing status, and to switch to non-animal-tested products in one scenario. Respondents exhibiting higher altruism are often found to be significantly more likely to switch to the alternative product, although this factor was not found to statistically significantly affect attitudes, whilst variables representing attitudes and pet ownership were also commonly statistically significant in the scenarios. Meanwhile, respondents who prioritise products' brand are less likely to switch to alternative products in certain scenarios, whilst those giving higher importance to price are also less likely to switch when a higher price premium is applied on non-animal-tested products. Lastly, and contrary to

expectations, it is not found that respondents with particular purchase needs are less likely to switch to non-animal-tested alternatives.

The study has therefore identified particular consumer characteristics which affect the likelihood of supporting animal testing in product development, and those who result to be more likely to switch to more ethical shampoo products. Particularly in the context of growing demand for such products, and as awareness about animal welfare is expected to grow even further in the future, this study brings forth several implications for marketers in order to keep up with the growing demand for ethical products and target the most profitable consumer groups, as well as increase awareness among those who require more initiative to make the switch towards purchasing non-animal tested products.

Marketers themselves can contribute to further raising awareness on animal testing by, for example, providing information through traditional and digital media channels and partnering with animal rights organisations (Morell 2014). The role of information, as discussed at various points throughout this study, remains crucial for raising awareness, and the dissemination of more knowledge on animal use in testing for product development is highly important in seeking to further engender attitudes in consumers which lead them to favour products that preserve animal welfare (Vrij, Nunkoosing et al. 2003).

However, broader initiatives need to be taken in order to further encourage this shift. For instance, Lawrence, Muldoon et al. (2010) suggest that animal welfare should be introduced in the educational system to aid societal understanding of legal and ethical responsibilities towards animals. Moreover, other approaches and solutions are needed to reduce the need for animal experimentation. One example could be increased coordination and investment in alternative testing methods in order to make non-animal test methods a more feasible and widely available method in more circumstances, an issue which was discussed earlier on. In

addition, significant reductions in the amount of tests carried out can be achieved by providing easier access and facilitating availability to results derived from past tests in different laboratories (Höfer, Gerner et al. 2004). This could be done, for example, in the form of a specific directive for mandatory publication of all existing test results from animal testing in jurisdictions such as the European Union, which could successfully eliminate duplication of testing at a large scale.

Within its disclaimed limitations, this study has provided a contribution by presenting evidence supporting several previous results available in the literature concerning attitudes and consumer behaviour relating to ethical products, whilst focusing specifically on the case of animal testing in hair care products. By considering a large array of factors, some of which not thoroughly considered by the available literature, this study has also provided new insights about the relevant area, and about the interaction of these factors with attitudes and consumer behaviour. This being said, there is ample opportunity for further and more detailed research in the area, which can equip marketers with more insights and tools in order to more successfully meet the challenges and opportunities presented by the growing demand for products which safeguard animal welfare, and therefore also the opportunity to contribute to broader societal change.

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Appendices

Appendix 1 – Ethics Clearance

The below figure shows proof of receipt of ethics clearance to proceed with data collection from the Faculty Research Ethics Committee within the Faculty of Economics, Management and Accountancy.

Ethical Clearance   Dissertation x

Fema Ethics Committee <research-ethics.fema@um.edu.mt>   Tue, 21 Apr, 12:54
to me ▾

Dear Abigail

Please note that FREC has reviewed your forms and has approved your proposal. You may continue with your research project.

Regards

Josian Grech
Secretary to the FEMA Research Ethics Committee

Faculty of Economics, Management & Accountancy
Dean's Office
Room 425
Humanities B (FEMA)
University of Malta
Msida
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Email: research-ethics.fema@um.edu.mt

Appendix 2 - Survey

This section outlines the survey invitation on eSims as well as the survey structure. This includes the cover letter whereby students had to confirm acceptance of participation in the survey. This survey outline takes into consideration the 'Depends' condition while the differences in the survey displayed to those with a 'Does Not Depend' condition are shown at the end.

Dear Student,

My name is Abigail Sant and I am currently reading for a Master's degree in Strategic Management and Digital Marketing. I would be grateful if you spare 5 minutes of your time to answer this survey for my dissertation which focuses on University of Malta students' perceptions towards purchasing animal tested products.

The link to the survey is https://uom.eu.qualtrics.com/jfe/form/SV_3XiYB8P7YqenbX7.

Your confidentiality will be ensured as there is no way that I can identify you as a respondent. You also have the option to leave the survey at any time or opt-out at the end.

Your participation will contribute significantly toward this research.

Should you encounter any problems or have any questions, feel free to email me on abigail.sant.16@um.edu.mt.

Kind Regards,

Abigail Sant

****
This message is being sent by the Office of the Registrar on behalf of the signatory/ies of the above message text.

You are receiving this message on the basis of the consent provided by yourself at the time of your last enrolment.

Your personal details were not disclosed in order to send the above message. Please do NOT reply to the above message address. In case of queries relating to the content of the message, kindly send an email to the signatory/ies *abigail.sant.16@um.edu.mt*

To opt out of receiving similar messages, or change/review your settings, please log into your eSIMS account (https://www.um.edu.mt/esims) then choose 'View/Update Privacy and Data Protection Details'.

Dear Respondent,

My name is Abigail Sant, and I am currently reading for a master's degree in Strategic Management and Digital Marketing. This survey is part of my Master's Course Dissertation, currently entitled 'The Influence of Attitudes on Animal Testing in Repeat Consumer Purchases', which is being supervised by Dr Miriam Pocock from the Faculty of Economics, Management and Accountancy at the University of Malta.

If you are currently a University student, I would like to invite you to contribute to my research by kindly answering this questionnaire which should take around 8 to 10 minutes.

My research focuses on the topic on animal tested products and it will analyse University of Malta students' knowledge and emotions related to animal tested products, specifically shampoo brands, and their effect on purchasing decisions.

Your participation in this survey would contribute significantly towards this research and would be greatly appreciated. All information obtained is strictly confidential and will be used solely for this research. You may discontinue your participation in the survey at any point.

If you have any issues or need clarification on anything related to this survey, you may contact me on abigail.sant.16@um.edu.mt.

By choosing 'yes' below, you will be confirming that you would like to participate in the survey and are aware that:

- The data collected will be anonymous. I will not be able to identify you as a respondent and will collect no information that will allow me to do so.
- All information gathered will be used solely for extracting results for my dissertation research.
- Such data will only be accessible by myself as the researcher and potentially, my supervisor.
- Should you, for any reason change your mind and not want your responses to be recorded and shared with me, you can opt-out at the end of the survey.

Thank you in advance for taking the time to respond to this questionnaire.

Best Regards,
Abigail Sant

I accept to participate in this survey.

Yes

No

Are you a University of Malta student?

Yes

No

→

While answering the questionnaire, it is very important to keep in mind and **assume that your choice of shampoo depends on a particular criterion**, such as having the need to buy anti-dandruff shampoo or colour care. I.e. assume that the shampoo/hair care product you use is subject to a particular criterion.

→

Definitions:

Cruelty-Free: A brand/company listed as cruelty-free either signed PETA's statement of assurance or provided a statement verifying that it does not conduct or commission any animal tests on ingredients, formulations or finished products and that they pledge not to do so in the future (PETA, n.d.).

Animal Tested/Tested on Animals: The use of animals in experiments within commercial, academic or research establishments (Jha, 2005)

How often do you purchase shampoo?

Once a week
Once every fortnight
Once a month
Once every few months
Once a year
Never

To what extent do you consider the following factors when buying shampoo?
1 being not important and 4 being very important.

*If you are using a phone, I suggest you rotate the screen.

	1 (Not important)	2 (Slightly important)	3 (Moderately important)	4 (Very important)
Price	○	○	○	○
Quality	○	○	○	○
Brand	○	○	○	○
Not tested on animals	○	○	○	○

What is the cost of the shampoo product you most commonly use?

€0 - €4.99

€5.00 - €9.99

€10.00 - €14.99

€15.00 - €19.99

€20.00 - €24.99

€25.00 - €29.00

More than €30

Please list down your most purchased brand of shampoo.

[   ]

Have you ever owned a shampoo product which is not tested on animals?

Yes

No

I don't know

If you answered yes: How did you know that it was not tested on animals?

Product Labelling

Online

By Word of mouth

Other: Please Specify

→

What do you think this logo represents?

A vegan cosmetic brand

A fair-trade cosmetic brand

A cruelty-free brand

A brand which does not test on animals

A brand which is cruelty-free and does not test on animals

None of the above

What do you think this logo represents?

A vegan cosmetic brand

A fair-trade cosmetic brand

A cruelty-free brand

A brand which does not test on animals

A brand which is cruelty-free and does not test on animals

None of the above

What do you think this logo represents?

A vegan cosmetic brand

A fair-trade cosmetic brand

A cruelty-free brand

A brand which does not test on animals

A brand which is cruelty-free and does not test on animals

None of the above

Would you prohibit animal research for shampoo development if you had the authority to do so?

Yes

No

I don't know

Do you think that the fact that we have the option to use animals in research gives us the right to do so?

Yes

No

I don't know

Do you think animals have feelings?

Yes

No

Do you think it is more acceptable to test on animals for scientific purposes if the effects on the animals are temporary?

Yes

No

←   →

For the following set of questions, kindly keep in mind and assume that your choice of shampoo **depends** on a particular criterion, such as having the need to buy anti-dandruff shampoo or colour care. I.e. assume that the shampoo/hair care product you use is subject to a particular criterion.

Let's say the name of the shampoo you purchase on a repeated basis is labelled Shampoo X.

You are looking at the shelf. Shampoo X which is €1 cheaper is tested on animals. Shampoo Y is not animal tested. Which one would you choose?

Shampoo X

Shampoo Y

You are looking at the shelf. Imagine now that the shampoo X which is tested on animals is €2 cheaper. Shampoo Y is not animal tested. Which one would you choose?

Shampoo X

Shampoo Y

You are looking at the shelf. In this case, Shampoo X is tested on animals and Shampoo Y is not. You recognise the brand name of Shampoo Y as it is familiar to you. Which one would you choose?

Shampoo X

Shampoo Y

You are looking at the shelf. Shampoo X is tested on animals and shampoo Y is not. Now assume you do not recognise the brand of Shampoo Y as you have never heard of it. Which one would you choose?

Shampoo X

Shampoo Y

If Shampoo X had a prominent label or logo that it is in fact tested on animals, how would you feel about it?

You are looking at the shelf. Imagine now that all products available are tested on animals. Do you buy the product or go to another shop to purchase a cruelty-free product?

Buy the product

Go to another shop

← →

For the following statements, kindly indicate the most accurate response where 0 = Never, 1 = Once, 2 = more than Once, 3 = Often and 4 = Very Often.

How often would you exhibit the following behaviours?

*If you are using a phone I suggest you rotate the screen.

	0 (Never)	1 (Once)	2 (More than Once)	3 (Often)	4 (Very Often)
I would give directions to someone I did not know.	O	O	O	O	O
I would give money to a charity.	O	O	O	O	O
I would help carry belongings of someone I did not know.	O	O	O	O	O
I would allow someone I did not know to go in front of me in line.	O	O	O	O	O
I would let a neighbour I did not know well borrow an item of value to me.	O	O	O	O	O
I would offer to help a handicapped or elderly person across the street.	O	O	O	O	O
I would offer my seat on a train or bus to someone who was standing.	O	O	O	O	O

Do you own any pets?

Yes

No

Do you like being in the company of animals?

Yes

No

Are you a vegeterian/vegan?

Yes

No

← →

Gender

Male

Female

Other

Age

To confirm your responses, kindly confirm below. Otherwise, if you would not like your responses to be recorded, kindly select 'Opt Out.'

Once again, thank you for your time. Your response it greatly appreciated.

Confirm

Opt Out

We thank you for your time spent taking this survey.
Your response has been recorded.

Should the 'Does Not Depend' condition be displayed to the respondent, the only differences in the survey are as follows:

While answering the questionnaire, it is very important to keep in mind and **assume that your choice of shampoo does not depend on any criteria** such as buying anti-dandruff shampoo or colour care. I.e. Assume that you just buy 'original' or 'normal' shampoo.

→

For the following set of questions, it is very important to keep in mind and **assume that your choice of shampoo does not depend on any criteria** such as buying anti-dandruff shampoo or colour care. I.e. Assume that you just buy 'original' or 'normal' shampoo.

Appendix 3 – Descriptive Statistics Tables

Table 13 – Age and Gender Distribution of Sample

Age and Gender Distribution of Sample					
Age	**Frequency**	**%**	**Gender**	**Frequency**	**%**
17-24	74	72.5	Male	41	40.2
25-34	15	14.7	Female	61	59.8
35-44	10	9.8			
45-54	1	1.0			
55-64	1	1.0			
65+	1	1.0			
	102	**100**		**102**	**100**

Table 14 - Age and Gender Distribution by condition assigned to respondents

Choice Depends on Specific Criterion						Choice Does Not Depend on Specific Criterion					
Age	**Frequency**	**%**	**Gender**	**Frequency**	**%**	**Age**	**Frequency**	**%**	**Gender**	**Frequency**	**%**
17-24	38	73.1	Male	22	42.3	17-24	36	72	Male	19	38
25-34	7	13.5	Female	30	57.7	25-34	8	16	Female	31	62
35-44	5	9.6				35-44	5	10			
45-54	0	0.0				45-54	1	2			
55-64	1	1.9				55-64	0	0			
65+	1	1.9				65+	0	0			
	52	**100**		**52**	**100**		**50**	**100**			**100**

Table 15 – Importance Ratings given to product characteristics

Importance Rating of Product Characteristics									
	1 (Not Important)		**2 (Slightly Important)**		**3 (Moderately Important)**		**4 (Very Important)**		
	Frequency	*%*	*Frequency*	*%*	*Frequency*	*%*	*Frequency*	*%*	*Total %*
Price	8	7.8	29	28.4	51	50.0	14	13.7	100
Quality	4	3.9	5	4.9	31	30.4	62	60.8	100
Brand	15	14.7	30	29.4	36	35.3	21	20.6	100
Not Tested on Animals	19	18.6	37	36.3	26	25.5	20	19.6	100

Table 16 – Frequency of respondents by current spend on shampoo products

Prices of shampoo products "most commonly used" by respondents	Frequency	%
€0 - €4.99	16	15.7
€5 - €9.99	32	31.4
€10 - €14.99	28	27.5
€15 - €19.99	11	10.8
€20 - €24.99	7	6.9
€25 - €29.99	6	5.9
€30+	2	2.0

Table 17 - Percentage of sample spending at each price band by category of importance given to price

Percentage of sample spending at each price band by category of importance given to price in purchase decision							
	€0 - €4.99	€5 - €9.99	€10 - €14.99	€15 - €19.99	€20 - €24.99	€25 - €29.99	€30+
Price Importance: 1	12.5	37.5	25.0	12.5	0.0	12.5	0.0
Price Importance: 2	6.9	34.5	17.2	10.3	13.8	13.8	3.4
Price Importance: 3	13.7	25.5	37.3	13.7	5.9	2.0	2.0
Price Importance: 4	42.9	42.9	14.3	0.0	0.0	0.0	0.0

Table 18 - Proportion of respondents owning non-animal-tested shampoo products and proportion of respondents knowledgeable about product status

Have you ever owned a shampoo product which is not tested on animals?	Frequency	If yes: How did you know it was not tested on animals?	Frequency
Yes	37	Product Labelling	30
No	2	Online	7
I don't know	63	Word of Mouth	0
		Other	0

Table 19 - Respondents' knowledge of meaning of animal testing logos*

Knowledge of Animal Testing and Cruelty Free Logos			
	"Not Tested on Animals" Rabbit	Cruelty Free Bunny	Leaping Bunny
	Percentages		
A vegan cosmetic brand	7.8	9.8	6.9
A fair-trade cosmetic brand	2.9	2.9	11.8
A cruelty-free brand	29.4	**32.4**	**14.7**
A brand which does not test on animals	**33.3**	**12.7**	**19.6**
A brand which is cruelty-free and does not test on animals	15.7	30.4	33.3

*Bold denotes correct answer/s.

Table 20 - Responses to Attitudinal Questions about Animal Testing

	Would you prohibit animal research for shampoo development if you had the authority to do so?	Does the fact that we have the option to use animals in research give us the right to do so?	Do you think animals have feelings?	Do you think animal testing is more acceptable if the effects on the animals are temporary?
	Frequency	*Frequency*	*Frequency*	*Frequency*
Yes	73	11	101	45
No	15	77	1	57
I don't know	14	14		

Table 21 - Respondents' choices in five scenarios presented

Scenarios: Differences between Shampoo X and Shampoo Y; Buy Product or Go to Another Shop			
		Shampoo X	**Shampoo Y**
Shampoo X is €1 cheaper than Shampoo Y	**Depends on Specific Criterion**	21.2	78.8
	Does Not	30	70
Shampoo X is €2 cheaper than Shampoo Y	**Depends on Specific Criterion**	42.3	57.7
	Does Not	38	62
Respondent recognises the Brand of Shampoo Y	**Depends on Specific Criterion**	13.5	86.5
	Does Not	18	82
Respondent does not recognise the Brand of Shampoo Y	**Depends on Specific Criterion**	48.1	51.9
	Does Not	52	48
		Buy	**Go to Another Shop**
Buy Product or go to Another Shop	**Depends on Specific Criterion**	63.5	36.5
	Does Not	70	30

Table 22 - Frequency Table of Altruism Scores

Altruism Scores: Frequency Table							
Altruism Level	**Frequency**	**Altruism Level**	**Frequency**	**Altruism Level**	**Frequency**	**Altruism Level**	**Frequency**
6	3	12	6	18	4	24	7
7	0	13	8	19	10	25	3
8	1	14	9	20	3	26	1
9	3	15	6	21	4	27	0
10	3	16	9	22	4	28	2
11	7	17	6	23	3		

Table 23 - Responses to indicators of concern for animal welfare

	Indicators of Concern for Animal Welfare		
	Do you own any pets?	**Do you enjoy being in the company of animals?**	**Are you a vegetarian/vegan?**
Yes	66	94	6
No	36	8	96

Appendix 4 – Statistical Test Results: Chi-Square Tests and t-Tests

Table 24 - Chi-Square Test: 'Would You Prohibit [...]?' vs. pet ownership

Observed Values (O_i)		Do You Own Pets?		
		Yes	No	Row Total (R_i)
Would you prohibit animal research for shampoo development if you had the authority to do so?	Yes	51	22	73
	No	9	6	15
	I Don't Know	6	8	14
	Column Totals (C_j)	66	36	**102**

Expected Values (E_i)		Do You Own Pets?		
		Yes	No	Row Total (R_i)
Would you prohibit animal research for shampoo development if you had the authority to do so?	Yes	47.235	25.765	73.000
	No	9.706	5.294	15.000
	I Don't Know	9.059	4.941	14.000
	Column Totals (C_j)	66.000	36.000	**102**

Chi-Square Test p-value	0.140717157	Test Statistic Calculation $\sum[(O_i - E_i)^2/E_i]$		
df = (R - 1)(C - 1)	2	0.300	0.550	
Chi-Square Test Statistic	3.922	0.051	0.094	
Chi-Square Critical Value ($\alpha = 0.05$)	5.991464547	1.033	1.894	3.922

Table 25 - Chi-Square Test: 'Would You Prohibit [...]?' vs. company of animals

Observed Values (O_i)		Do You Enjoy […] The Company of Animals?		
		Yes	No	Row Total (R_i)
Would you prohibit animal research for shampoo development if you had the authority to do so?	Yes	68	5	73
	No	13	2	15
	I Don't Know	13	1	14
	Column Totals (C_j)	94	8	**102**
Expected Values (E_i)		Do You Enjoy […] The Company of Animals?		
		Yes	No	Row Total (R_i)
Would you prohibit animal research for shampoo development if you had the authority to do so?	Yes	67.275	5.725	73.000
	No	13.824	1.176	15.000
	I Don't Know	12.902	1.098	14.000
	Column Totals (C_j)	94.000	8.000	**102**
Chi-Square Test p-value	0.692538583	Test Statistic Calculation $\sum[(O_i - E_i)^2/E_i]$		
df = (R - 1)(C - 1)	2	0.008	0.092	
Chi-Square Test Statistic	0.735	0.049	0.576	
Chi-Square Critical Value (α = 0.05)	5.991464547	0.001	0.009	0.735

Table 26 - Chi-Square Test: 'Would You Prohibit [...]?' vs. vegetarian/vegan

Observed Values (O_i)		Are You Vegetarian/Vegan?		
		Yes	No	Row Total (R_i)
Would you prohibit animal research for shampoo development if you had the authority to do so?	Yes	5	68	73
	No	0	15	15
	I Don't Know	1	13	14
	Column Totals (C_j)	6	96	**102**

Expected Values (E_i)		Are You Vegetarian/Vegan?		
		Yes	No	Row Total (R_i)
Would you prohibit animal research for shampoo development if you had the authority to do so?	Yes	4.294	68.706	73.000
	No	0.882	14.118	15.000
	I Don't Know	0.824	13.176	14.000
	Column Totals (C_j)	6.000	96.000	**102**

Chi-Square Test p-value	0.576671141	Test Statistic Calculation $\sum[(O_i - E_i)^2/E_i]$		
df = (R - 1)(C - 1)	2	0.116	0.007	
Chi-Square Test Statistic	1.101	0.882	0.055	
Chi-Square Critical Value ($\alpha = 0.05$)	5.991464547	0.038	0.002	1.101

Table 27 - Chi-Square Test: 'Would You Prohibit [...]?' vs. gender

Observed Values (O_i)		Gender		
		Male	Female	Row Total (R_i)
Would you prohibit animal research for shampoo development if you had the authority to do so?	Yes	27	46	73
	No	10	5	15
	I Don't Know	4	10	14
	Column Totals (C_j)	41	61	**102**

Expected Values (E_i)		Gender		
		Male	Female	Row Total (R_i)
Would you prohibit animal research for shampoo development if you had the authority to do so?	Yes	29.343	43.657	73.000
	No	6.029	8.971	15.000
	I Don't Know	5.627	8.373	14.000
	Column Totals (C_j)	41.000	61.000	**102**

		Test Statistic Calculation $\sum[(O_i - E_i)^2/E_i]$		
Chi-Square Test p-value	0.064825346			
df = (R - 1)(C - 1)	2	0.187	0.126	
Chi-Square Test Statistic	5.472	2.615	1.757	
Chi-Square Critical Value (α = 0.05)	5.991464547	0.471	0.316	5.472

Table 28 - t-Test: 'Would You Prohibit [...]?' vs. altruism

	Would you prohibit animal research for shampoo development if you had the authority to do so?					
	YES	*NO*	*YES*	*I DON'T KNOW*	*NO*	*I DON'T KNOW*
Mean **Altruism Score**	16.61643836	16.53333333	16.61643836	16.07142857	16.53333333	16.07142857
Variance	25.90639269	31.83809524	25.90639269	22.37912088	31.83809524	22.37912088
Observations	73	15	73	14	15	14
Pooled Variance	26.87201869		25.36692759		27.28377425	
Hypothesized Mean Difference	0		0		0	
df	86		85		27	
t Stat	0.056551334		0.370882367		0.237963783	
P(T<=t) one-tail	0.477516892		0.355823942		0.406852916	
t Critical one-tail	1.662765449		1.6629785		1.703288446	
P(T<=t) two-tail	0.955033785		0.711647885		0.813705831	
t Critical two-tail	1.987934206		1.988267907		2.051830516	

Table 29 - t-Test: 'Would You Prohibit [...]?' vs. non-animal-testing importance rating

	Would you prohibit animal research for shampoo development if you had the authority to do so?					
	YES	*NO*	*YES*	*I DON'T KNOW*	*NO*	*I DON'T KNOW*
Mean **NTA Rating**	2.684931507	1.6	2.684931507	2.214285714	1.6	2.214285714
Variance	0.996575342	0.4	0.996575342	0.796703297	0.4	0.796703297
Observations	73	15	73	14	15	14
Pooled Variance	0.899458426		0.966006677		0.591005291	
Hypothesized Mean Difference	0		0		0	
df	86		85		27	
t Stat	4.035315519		1.641231857		-2.150232291	
P(T<=t) one-tail	5.89018E-05		0.052222289		0.020325906	
t Critical one-tail	1.662765449		1.6629785		1.703288446	
P(T<=t) two-tail	0.000117804		0.104444578		0.040651812	
t Critical two-tail	1.987934206		1.988267907		2.051830516	

Table 30 – Chi-Square Test: 'Does the Option to use animals [...] [give] [...] the right [...]?' vs. pet ownership

Observed Values (O_i)		Do you own pets?		
		Yes	No	Row Total (R_i)
Do you think that […] the option to use animals in research gives us the right to do so?	Yes	6	5	11
	No	52	25	77
	I Don't Know	8	6	14
	Column Totals (C_j)	66	36	**102**

Expected Values (E_i)		Do you own pets?		
		Yes	No	Row Total (R_i)
Do you think that […] the option to use animals in research gives us the right to do so?	Yes	7.118	3.882	11.000
	No	49.824	27.176	77.000
	I Don't Know	9.059	4.941	14.000
	Column Totals (C_j)	66.000	36.000	**102**

Chi-Square Test p-value	0.571987391	Test Statistic Calculation $\sum[(O_i - E_i)^2/E_i]$		
df = (R - 1)(C - 1)	2	0.175	0.322	
Chi-Square Test Statistic	1.117	0.095	0.174	
Chi-Square Critical Value (α = 0.05)	5.991464547	0.124	0.227	1.117

Table 31 - Chi-Square Test: 'Does the Option to use animals [...] [give] [...] the right [...]?' vs. company of animals

Observed Values (O_i)		Do You Enjoy […] The Company of Animals?		
		Yes	No	Row Total (R_i)
Do you think that […] the option to use animals in research gives us the right to do so?	Yes	10	1	11
	No	71	6	77
	I Don't Know	13	1	14
	Column Totals (C_j)	94	8	**102**
Expected Values (E_i)		Do You Enjoy […] The Company of Animals?		
		Yes	No	Row Total (R_i)
Do you think that […] the option to use animals in research gives us the right to do so?	Yes	10.137	0.863	11.000
	No	70.961	6.039	77.000
	I Don't Know	12.902	1.098	14.000
	Column Totals (C_j)	94.000	8.000	**102**
Chi-Square Test p-value	0.98340465	Test Statistic Calculation $\sum[(O_i - E_i)^2/E_i]$		
df = (R - 1)(C - 1)	2	0.002	0.022	
Chi-Square Test Statistic	0.033	0.000	0.000	
Chi-Square Critical Value (α = 0.05)	5.991464547	0.001	0.009	0.033

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Table 32 - Chi-Square Test: 'Does the Option to use animals [...] [give] [...] the right [...]?' vs. vegetarian/vegan

Observed Values (O$_i$)		Are You Vegetarian/Vegan?		
		Yes	No	Row Total (R$_i$)
Do you think that […] the option to use animals in research gives us the right to do so?	Yes	0	11	11
	No	6	71	77
	I Don't Know	0	14	14
	Column Totals (C$_j$)	6	96	**102**

Expected Values (E$_i$)		Are You Vegetarian/Vegan?		
		Yes	No	Row Total (R$_i$)
Do you think that […] the option to use animals in research gives us the right to do so?	Yes	0.647	10.353	11.000
	No	4.529	72.471	77.000
	I Don't Know	0.824	13.176	14.000
	Column Totals (C$_j$)	6.000	96.000	**102**

		Test Statistic Calculation $\sum[(O_i - E_i)^2/E_i]$		
Chi-Square Test p-value	0.355260983			
df = (R - 1)(C - 1)	2	0.647	0.040	
Chi-Square Test Statistic	2.070	0.477	0.030	
Chi-Square Critical Value (α = 0.05)	5.991464547	0.824	0.051	2.070

Table 33 - Chi-Square Test: 'Does the Option to use animals [...] [give] [...] the right [...]?' vs. gender

Observed Values (O_i)			Gender		
			Male	Female	Row Total (R_i)
Do you think that […] the option to use animals in research gives us the right to do so?	Yes		6	5	11
	No		25	52	77
	I Don't Know		10	4	14
	Column Totals (C_j)		41	61	**102**

Expected Values (E_i)			Gender		
			Male	Female	Row Total (R_i)
Do you think that […] the option to use animals in research gives us the right to do so?	Yes		4.422	6.578	11.000
	No		30.951	46.049	77.000
	I Don't Know		5.627	8.373	14.000
	Column Totals (C_j)		41.000	61.000	**102**

Chi-Square Test p-value	0.014006257	Test Statistic Calculation $\sum[(O_i - E_i)^2/E_i]$		
df = (R - 1)(C - 1)	2	0.563	0.379	
Chi-Square Test Statistic	8.537	1.144	0.769	
Chi-Square Critical Value (α = 0.05)	5.991464547	3.397	2.284	8.537

Table 34- t-Test: 'Does the Option to use animals [...] [give] [...] the right [...]?' vs. altruism

	Do you think that […] the option to use animals in research gives us the right to do so?					
	YES	NO	YES	I DON'T KNOW	NO	I DON'T KNOW
Mean **Altruism Score**	15.09090909	16.90909091	15.09090909	15.57142857	16.90909091	15.57142857
Variance	23.89090909	25.32057416	23.89090909	30.41758242	25.32057416	30.41758242
Observations	11	77	11	14	77	14
Pooled Variance	25.15433404		27.57989836		26.06508099	
Hypothesized Mean Difference	0		0		0	
df	86		23		89	
t Stat	-1.124685944		-0.227093668		0.901790476	
P(T<=t) one-tail	0.131925714		0.411178654		0.184801096	
t Critical one-tail	1.662765449		1.713871528		1.662155326	
P(T<=t) two-tail	0.263851428		0.822357307		0.369602191	
t Critical two-tail	1.987934206		2.06865761		1.9869787	

Table 35 - t-Test: 'Does the Option to use animals [...] [give] [...] the right [...]?' vs. non-animal-testing importance rating

	Do you think that […] the option to use animals in research gives us the right to do so?					
	YES	*NO*	*YES*	*I DON'T KNOW*	*NO*	*I DON'T KNOW*
Mean **NTA Rating**	1.909090909	2.662337662	1.909090909	1.785714286	2.662337662	1.785714286
Variance	1.090909091	0.910799727	1.090909091	0.796703297	0.910799727	0.796703297
Observations	11	77	11	14	77	14
Pooled Variance	0.931742676		0.924618859		0.894133956	
Hypothesized Mean Difference	0		0		0	
df	86		23		89	
t Stat	-2.420971315		0.318450447		3.190806278	
P(T<=t) one-tail	0.008791006		0.376508495		0.000980171	
t Critical one-tail	1.662765449		1.713871528		1.662155326	
P(T<=t) two-tail	0.017582013		0.753016989		0.001960342	
t Critical two-tail	1.987934206		2.06865761		1.9869787	

Table 36 - Chi-Square Test: '[Is animal testing] more acceptable [...] if the effects are temporary?' vs. pet ownership

Observed Values (O_i)		Do you own pets?		
		Yes	No	Row Total (R_i)
Do you think it is more acceptable to test on animals […] if the effects […] are temporary?	Yes	24	21	45
	No	42	15	57
	Column Totals (C_j)	66	36	**102**

Expected Values (E_i)		Do you own pets?		
		Yes	No	Row Total (R_i)
Do you think it is more acceptable to test on animals […] if the effects […] are temporary?	Yes	29.118	15.882	45.000
	No	36.882	20.118	57.000
	Column Totals (C_j)	66.000	36.000	**102**

Chi-Square Test p-value	0.032718541	Test Statistic Calculation $\sum[(O_i - E_i)^2/E_i]$		
df = (R - 1)(C - 1)	1	0.899	1.649	
Chi-Square Test Statistic	4.560	0.710	1.302	
Chi-Square Critical Value (α = 0.05)	3.841458821			4.560

Table 37 - Chi-Square Test: '[Is animal testing] more acceptable [...] if the effects are temporary?' vs. company of animals

Observed Values (O_i)		Do You Enjoy […] The Company of Animals?		
		Yes	No	Row Total (R_i)
Do you think it is more acceptable to test on animals […] if the effects […] are temporary?	Yes	41	4	45
	No	53	4	57
	Column Totals (C_j)	94	8	**102**

Expected Values (E_i)		Do You Enjoy […] The Company of Animals?		
		Yes	No	Row Total (R_i)
Do you think it is more acceptable to test on animals […] if the effects […] are temporary?	Yes	41.471	3.529	45.000
	No	52.529	4.471	57.000
	Column Totals (C_j)	94.000	8.000	**102**

		Test Statistic Calculation $\sum[(O_i - E_i)^2/E_i]$		
Chi-Square Test p-value	0.727051124			
df = (R - 1)(C - 1)	1	0.005	0.063	
Chi-Square Test Statistic	0.122	0.004	0.050	
Chi-Square Critical Value (α = 0.05)	3.841458821			0.122

Table 38 - Chi-Square Test: '[Is animal testing] more acceptable [...] if the effects are temporary?' vs. vegan/vegetarian

Observed Values (O $_i$)		Are You Vegetarian/Vegan?		
		Yes	No	Row Total (R$_i$)
Do you think it is more acceptable to test on animals [...] if the effects [...] are temporary?	Yes	1	44	45
	No	5	52	57
	Column Totals (C$_j$)	6	96	**102**

Expected Values (E $_i$)		Are You Vegetarian/Vegan?		
		Yes	No	Row Total (R$_i$)
Do you think it is more acceptable to test on animals [...] if the effects [...] are temporary?	Yes	2.647	42.353	45.000
	No	3.353	53.647	57.000
	Column Totals (C$_j$)	6.000	96.000	**102**

Chi-Square Test p-value	0.162744481	Test Statistic Calculation $\sum[(Oi - Ei)^2/Ei]$		
df = (R - 1)(C - 1)	1	1.025	0.064	
Chi-Square Test Statistic	1.949	0.809	0.051	
Chi-Square Critical Value (α = 0.05)	3.841458821			1.949

Table 39 - Chi-Square Test: '[Is animal testing] more acceptable [...] if the effects are temporary?' vs. gender

Observed Values (O_i)		Gender		
		Male	Female	Row Total (R_i)
Do you think it is more acceptable to test on animals […] if the effects […] are temporary?	Yes	25	20	45
	No	16	41	57
	Column Totals (C_j)	41	61	**102**

Expected Values (E_i)		Gender		
		Male	Female	Row Total (R_i)
Do you think it is more acceptable to test on animals […] if the effects […] are temporary?	Yes	18.088	26.912	45.000
	No	22.912	34.088	57.000
	Column Totals (C_j)	41.000	61.000	**102**

Chi-Square Test p-value	0.004936015	Test Statistic Calculation $\sum[(O_i - E_i)^2 / E_i]$		
df = (R - 1)(C - 1)	1	2.641	1.775	
Chi-Square Test Statistic	7.903	2.085	1.401	
Chi-Square Critical Value (α = 0.05)	3.841458821			7.903

Table 40 - t-Test: '[Is animal testing] more acceptable [...] if the effects are temporary?' vs. altruism

	Do you think it is more acceptable to test on animals […] if the effects […] are temporary?	
	YES	*NO*
Mean **Altruism Score**	17.04444444	16.12280702
Variance	27.9979798	24.14536341
Observations	45	57
Pooled Variance	25.84051462	
Hypothesized Mean Difference	0	
df	100	
t Stat	0.909186801	
P(T<=t) one-tail	0.182718807	
t Critical one-tail	1.660234326	
P(T<=t) two-tail	0.365437614	
t Critical two-tail	1.983971519	

Table 41 - t-Test: '[Is animal testing] more acceptable [...] if the effects are temporary?' vs. non-animal-testing importance rating

	Do you think it is more acceptable to test on animals […] if the effects […] are temporary?	
	YES	*NO*
Mean **NTA Rating**	2.133333333	2.719298246
Variance	0.754545455	1.098370927
Observations	45	57
Pooled Variance	0.947087719	
Hypothesized Mean Difference	0	
df	100	
t Stat	-3.019396222	
P(T<=t) one-tail	0.001607168	
t Critical one-tail	1.660234326	
P(T<=t) two-tail	0.003214337	
t Critical two-tail	1.983971519	