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KNOWLEDGE IN ACTION

Faculty of Business Economics
Master of Management

Master's thesis

The effects of different influencer types in conservation marketing

Lian Martens
Thesis presented in fulfillment of the requirements for the degree of Master of Management, specialization
International Marketing Strategy

SUPERVISOR :
Prof. dr. Robert MALINA

MENTOR :
De heer Tuan NGUYEN

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Preface

This thesis was written for my masters' degree in Master of Management with a specialization in International Marketing Strategies and aims to explore the conservation of species. Starting my master's degree has been a mental challenge. I sought after new boundaries to push before stepping back into the business world, and I am forever grateful for the great amount of support I have gotten throughout the journey of obtaining this degree.

The conservation of species is a subject I have always kept close to my heart. I got the opportunity to learn more about sustainability and biodiversity during my internship at the CSR department at Center Parcs in 2021. When an option arose to write a thesis and conduct research aimed at helping conservation organizations, I immediately knew this was the topic for me. Finding a relevant relation between those organizations and marketing was not easy, but I'm happy with the result that emerged from this research.

I would like to thank my supervisor Robert Malina and my mentor Tuan Nguyen for the support and extensive feedback they have provided me with throughout the journey of writing this thesis. Their guidance encouraged me to take this thesis to the finish line, I could not have done it without them.

A special word of thanks to my friends. Not only were they extremely supportive throughout the entire process, but also through all other steps in my career as a masters student. They were by my side whenever I needed them, I am a very lucky person to still have them here.

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Lian Martens

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Lommel, Belgium

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Summary

This thesis was written by Lian Martens to obtain the degree of Master of Management with specialization in International Marketing Strategies. The title of the study is "The effects of different influencer types in conservation marketing." and was guided by supervisor Robert Malina and mentor Tuan Nguyen.

The importance of sustainability, biodiversity and conservation of threatened species are a rising issue nowadays. Conservation organizations exist to preserve threatened animal species and their habitats, and they need the support of the public in order to keep on doing this successfully. These organizations rely largely on the donations of the public, but also other ways to support the organization are appreciated. In order to gain this support, conservation marketing is needed. The aim is to not only raise awareness of what is happening in the world and how conservation organizations can help, but mainly to motivate the public to engage with the organization. In order for conservation marketing to be effective, they are advised to follow the rising trends. One of those trends that is currently rising is the creation of virtual influencers and to use them in the marketing strategy. However, prior research on creating a virtual influencer specifically for conservation marketing is limited, and the differences with endorsing a human influencer for this purpose are still unknown. This research aims to fill that gap by answering the following research questions:

- RQ1 - Does the endorsement of a virtual influencer make a difference in the way a conservation message is perceived by the public compared to when a human influencer is endorsed?
- RQ2 - Will the endorsement of a (virtual) influencer for conservation marketing increase the public's support towards conservation?
- RQ3 - Does the public have a preferred influencer type in terms of copying behaviour towards conservation programs?

In order to find an answer to these questions, a survey experiment was conducted. Respondents of the survey were randomly assigned to either a human influencer, a virtual influencer or no influencer (receiving only a text). When only the text was received, it came with the note that this text was derived from the blog of a conservation organization. The text that was given was the same in all three survey types. The treatment of the experiment was solely the type of influencer the respondent was exposed to. The text was created by artificial intelligence with the request to include a small psychological distance and to motivate the reader to engage. The aim was set up to reach 40 respondents per survey type, resulting in a total of 120 respondents needed for the study.

To process the data retrieved from the surveys, either a Mann-Whitney U test or a Kruskal-Wallis H test was conducted. The choice of the test depends on whether there are two independent treatment groups being compared (the virtual influencer and the human influencer) or three independent treatment groups (virtual influencer, human influencer or no influencer). Non-parametric tests were chosen as the Shapiro-Wilk test showed the data to not be normally distributed.

All hypotheses that were set up for this study were rejected. This means that for the first research question, it can be concluded that the endorsement of a virtual influencer does not make a difference

in how a conservation message is perceived by the public compared to when a human influencer is endorsed for that message. The hypotheses that were tested for this question focussed on the trustworthiness of both influencer types and the perceived level of expertise these two influencers had. There was no significant difference in either the trustworthiness or the perceived level of expertise between the human influencer and the virtual influencer.

Looking at the second research question, the results found that endorsing an influencer (either human or virtual) does not make a difference in the public's intention to support conservation compared to when no influencer is endorsed. This research question was split in two hypotheses: one focused on the public's intention to donate and the other focused on the public's intention to support conservation in any other way than donations. Since these hypotheses were both rejected as well, it can be concluded that no significant differences were found between the three treatment groups. Not only is there no difference between endorsing an influencer or not, there is also no difference between endorsing a virtual influencer or a human influencer.

In the third research question, it was investigated if the public will be more eager to copy the behaviour of one specific influencer type over the other. With this hypothesis also being rejected, it can be concluded that there is no difference in how eager the public is to copy the behaviour between the virtual influencer and the human influencer. The hypothesis also tested for a difference between the influencer types and the text-only, which also resulted in no significant differences to be found.

Even though all hypotheses are rejected, this study does add value for conservation organizations looking to endorse an influencer for their marketing strategy. The descriptive statistics showed that all factors have a mean above 2.5 for all influencer types, meaning that the results were generally positive for all three survey types. This gives conservation organizations the opportunity to choose an influencer type that fits best with their image, or they can follow their personal preferences. Each influencer types comes with benefits and drawbacks which should be taken into consideration when deciding which one they want to add to their marketing strategy. With virtual influencers, the possibilities are endless. The character can be anywhere at any time, allowing for many possibilities in bringing visual messages about conservation. However, a large number of considerations should be taken into account in order for the virtual character to be perceived positively by the public. The authenticity, transparency and looks are a few of the many aspects that should be kept in mind as they will decide the way the public reacts to the virtual character. When endorsing a human influencer, the same can be said. One of the benefits is the large reach the influencers have on social media, but the organization cannot control everything this person says or posts on their social media channels. These are all different aspects that should be kept in mind when the decision needs to be made on which type of influencer to endorse or create for an effective conservation marketing strategy.

This research came with some limitations. Firstly, the one that had the most impact on the results: the influencers used in the survey were not real. Both the human influencer and the virtual influencer were created trough fake profiles. This was done on the one hand to prevent privacy issues, and on the other hand to ensure that both Instagram profiles were as similar to each other as possible. However, since none of the respondents could have known the influencers beforehand, this might

have affected their willingness to build a relationship with these influencers. Using a well-known person/character may have provided different results on this factor.

Furthermore, the virtual influencer created was animal-based and looked like a red panda. However, the possibilities of virtual influencers are not limited to animals and they can come in all kinds of forms. A red panda was chosen as it is one of the flagship species, but it is not known what the effect would be if a human-like virtual influencer was used, or if an animal-based virtual influencer was used based on another animal. Using a non-charismatic species instead of a flagship can result in very different outcomes, which is an interesting approach for future resea

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AI	:	Artificial intelligence
CGI	:	Computer-generated imagery
CPI	:	Celebrity persona identification
KMO	:	Kaiser-Meyer-Olkin test
NGO	:	Non-governmental organization
PCA	:	Principal component analysis
VR	:	Virtual reality

1. Introduction

Conservation marketing is not a new term for organisations with a conservation programme. Conservation programmes exist to protect (endangered) species, and conservation marketing educates the general public about the importance of the programmes (Smithsonian National Zoo & Conservation Biology Institute, 2020). With the continuous growth of urbanization and world population combined with the threats of climate change, survival gets more difficult for certain animal species and their habitats are slowly diminishing as well (Alshaheen, 2019). Therefore, the conservation programmes exist not only to protect animal species, but to preserve their habitats in the meantime (Smithsonian National Zoo & Conservation Biology Institute, 2020). Research has shown that these programmes have increased the life expectancy of animal species and have already saved certain species from extinction, which highlights the importance of these types of conservation programmes (Alshaheen, 2019). Conservation marketing aims at creating awareness and engagement in all subjects concerning nature and biodiversity, which includes conservation programmes of all types of organisations (Ryan, Mellish, Dorrian, Winefield, & Litchfield, 2019).

Following the latest trends in marketing, virtual influencers are on the rise (Hofeditz, Erle, Timm, Mirbabaie, 2023). Virtual influencers are non-human influencers, created by AI technology that are active on social media (Moustakas, Lamba, Mahmoud, Ranganathan, 2020 ; Mrad, Ramadan, and Nasr 2022). Many luxury brands like Prada, Dior, Louboutin, Versace, Burberry and Calvin Klein and other big names such as RedBull, Netflix, Apple and the World Health Organization have already partnered up with virtual influencers (Moustakas et al., 2020 ; Molenaar, 2022). Two examples can be seen in Figure 1, which are taken from the Instagram account of Shudu.gram[1] and lilmiquela[2]. Studies have already investigated their effectiveness (Moustakas et al., 2020) and how they are perceived by the customers (Sands, Ferraro, Demsar, Chandler, 2022 ; Kim, Kim, E, Shoenberger, 2023), but no research has yet investigated how (and if) virtual influencers can be effective for conservation marketing. This research aims to fill that gap, and will particularly be investigating the difference of customer perceptions between human influencers and virtual influencers endorsed specifically for conservation programs.
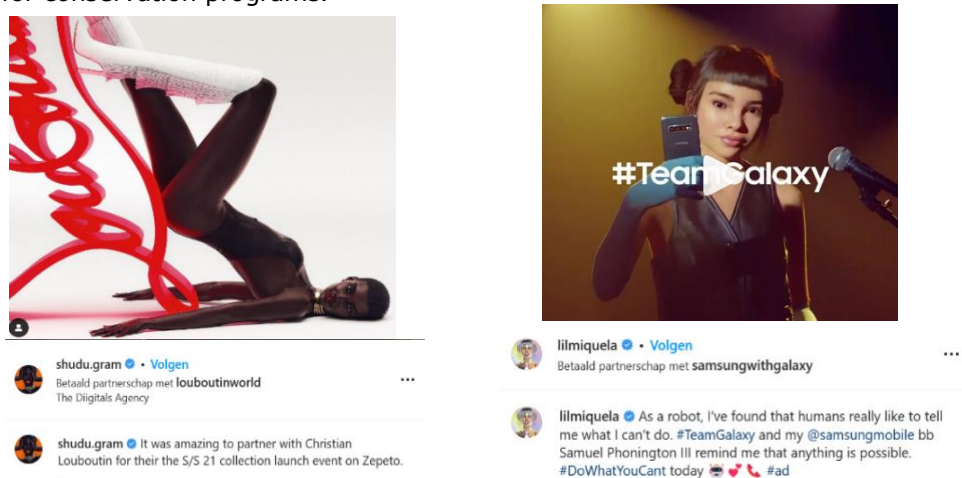

Figure 1: Collaborations with virtual influencers. Generated from Instagram

[1] www.instagram.com/shudu.gram/

[2] www.instagram.com/lilmiquela/

2. Literature study and context
a. The importance of conservation marketing

For a long period of time, it was assumed that providing the public with knowledge of a subject would cause a change in behaviour towards that subject (Gregg et al., 2022). Also in terms of conservation and biodiversity efforts, it was believed that providing the public with more knowledge about conservation programmes would change their behaviour towards it, following the idea of the knowledge-deficit model (Gregg et al., 2022). Multiple studies have focussed on this subject, and concluded that only providing knowledge will not cause behavioural change towards conservation (Barongi, Fisken, Parker & Gusset, 2015; Gregg et al., 2022; Schultz, 2011). It is proven that knowledge provision does increase the awareness about conservation (Šmelhausová, Riepe, Jarić & Esll, 2022) and a study conducted by Leiserowitz, Kates & Parris (2005) has also proven that the awareness towards the importance of conservation is high. However, the general public has not adapted their behaviour to this knowledge, which confirms that the knowledge-deficit model does not apply to conservation (Schultz, 2011; Gregg et al., 2022). More than just awareness, people need motivation and engagement to change their behaviour. In order to motivate and engage the public towards conservation programmes, conservation marketing is needed (Papworth et al., 2015).

Conservation marketing, like any other form of marketing, can come in many different ways. Whether it is online or offline, direct or indirect, it all has the single purpose of making an impact on the consumer. (Ryding, Boardman, Konstantinou, 2023). Marketing as a term was developed to aid the business world. The aim for this could be increasing brand awareness or increasing purchase intentions, to give some examples. Generally speaking, the goal is to change consumer behaviour. The marketing techniques used for businesses are effective, and therefore also implemented in conservation marketing more often. (Smith, Salazar, Starinchak, Thomas-Walters, & Veríssimo, 2020). This is why the awareness of trends in marketing is important, as the utilization of those trends in a conservational aspect can increase the effectiveness of a conservation marketing strategy (Barongi et al., 2015).

Marketing is a dynamic concept. Due to evolving technology and changing trends, marketing has to adapt regularly. (Srishti and Rishabh, 2023). One of those marketing-related changes thanks to modern technology, is the shift towards social media marketing (Al-Ababneh, 2022). Social media allows interaction between companies and their customers, making a positive impact on the customers' experience while simultaneously increasing visibility for the brand (Ryding et al., 2023). Nowadays, many companies rely on the use of social media advertising as it is a cost-effective way to reach and engage with the target audience. The aim of social media marketing is to influence the customers' purchasing intentions through platforms like Facebook, Twitter, Instagram and others. (Miteva, 2022 ; Veríssimo, 2021). Conservation marketing also hopped on the online trend, and wants to reach the public through multiple social media platforms (Macdonald et al., 2017). The main goal is to not only raise awareness, but also for the public to engage in conservation initiatives (Ryan et al., 2019).

b. Influencer endorsement in (conservation) marketing

The influence on the public through social media can be increased by involving celebrities or influencers in advertisements (Olmedo et al., 2020; Erdogan, 1999). To make it more clear what the difference is between influencers and celebrities, the description of Schouten, Janssen and Verspaget (2019) is followed, which describes celebrities as people who have a professional talent which has given them public recognition, while influencers are described as people who have managed to brand themselves as experts on a certain topic on social media channels. Influencers create content which they share with their large followers base. In addition, Gräve & Bartsch (2021) state that influencers have become popular through their own hard work, since they had no institutional support. Celebrities on the other hand often have managers, professional photographers etc to help build their career.

Influencer marketing is currently the most popular form of social media marketing. Results from Statista show that the influencer market size reached 16.4 billion U.S. dollar in 2022, a growth of 2.6 billion U.S. dollar compared to 2021 when the market size of influencer marketing was 13.8 billion U.S. dollar (Statista, 2022). A research done by Geyser (2023) adds an expectancy of the market size reaching 21.1 billion U.S. dollar in 2023.
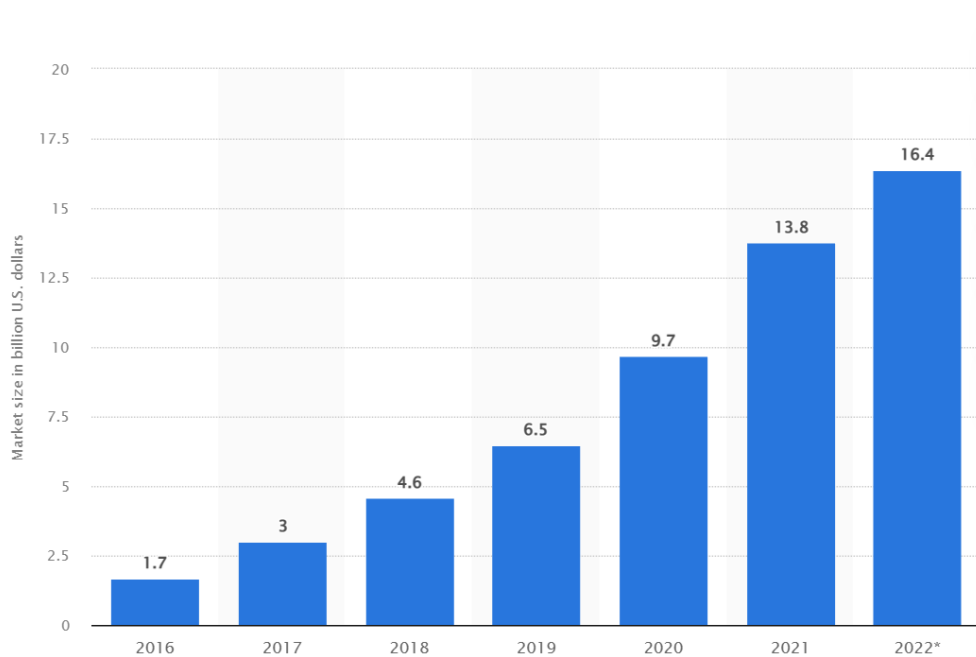
Table 1: influencer market size and growth. Retrieved from Statista (2023)

Customers are more easily influenced by people they look up to, or by people who they feel like they can relate to. Given the rise of social media all over the world, it has become easier for celebrities/influencers to make an impact on the consumer behaviour of their followers (Brown, 2020). For this reason, more and more companies will endorse celebrities or influencers for the marketing of their product. Figure 2 gives an example of an influencer (Zoe Sugg3) who is endorsed for the promotion of products.

Figure 2: Influencer endorsement. Generated from Instagram

Following with this trend, organizations with an aim towards conservation will either endorse or get the celebrities/influencers involved in order to increase the engagement for their initiatives (Olmedo et al., 2020; Erdogan, 1999). Leonardo DiCaprio is known for his acting career, but has also opened the Leonardo DiCaprio Foundation which aims to raise money for wildlife and marine conservation. Leonardo isn't the only celebrity who is supportive of sustainability efforts and wildlife conservation. Meryl Streep, Chris Hemsworth, Kate Walsh and Al Gore are some more examples of celebrities who are dedicated to showing support for conservation by partnering up with organizations or openly bringing up sustainability issues (BOAT international, n.d. ; Olmedo et al., 2020 ; Beauchemin, 2017). Another popular media personality who is important to mention in the context of conservation, is Steve Irwin. He was known mainly for his documentaries where he raised awareness of the importance of protecting endangered species and promoted wildlife conservation (Duignan, 2023). Prior research has proven that people who were involved with Irwin also had increased interest and support in conservation. This involvement also counted as a predictor for donations towards the wildlife foundation Irwin had set up (Brown, 2010). Besides celebrities, there are also social media influencers dedicated to conservation. Examples of these are Katryn Nelson (@plasticfreemermaid4), who puts the focus on conservation of sea life and Sterrin (@sterrinswildworld5), a Dutch influencer who is also an ambassador for National Geographic Junior (Deguzman, 2023).

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[3] www.instagram.com/zoesugg/

[4] www.instagram.com/plasticfreemermaid/

[5] www.instagram.com/sterrinswildworld/

Research conducted by Schouten et al. (2019) and years prior by Agrawal and Kamakura (1995) provide proof that the endorsement of celebrities or influencers is indeed an effective way of marketing a product. However, it is not without risks to endorse a celebrity or influencer for a brand. There is a big financial cost linked to the endorsement, but the reputation of the brand or organisation is also at risk due to decisions in the personal lives of the celebrity/influencer (Olmedo et al., 2020). This helps to increase the popularity of the rising virtual influencers on social media channels (Sands et al., 2022).

c. Virtual influencers

With the rise of AI combined with the popularity of influencers on social media, virtual influencers have risen on multiple social media platforms like Instagram, YouTube and TikTok (Sands et al., 2022). Just like social media influencers, virtual influencers are considered opinion leaders, have a large amount of followers on their social media and have influential powers over these followers. The main aspect that differs them from social media influencers, is that they are not real humans (Hofeditz et al, 2023). Instead, virtual influencers are created through CGI or artificial intelligence, and exist solely in the online environment (Kim et al., 2023).

Given their artificial nature, virtual influencers can exist in different forms. They can look like realistic humans (like Lil Miquela, Shudu Gram or Rozy.gram) , anime characters (like Noonoouri or Ani Malu), or even like animals (like Guggimon, Janky or Puff Puff) or food (like Nobody Sausage or Good Advice Cupcake)(VirtualHumans, z.d). Examples of the different types of virtual influencers can be found in Figure 3. Some famous cartoon characters have also found their way to social media, and are therefore now also considered as virtual influencers. The world famous Barbie can now be found on Youtube, Instagram, TikTok, Facebook and Twitter. This means she is no longer just a toy for children, but has expanded her world to social media platforms. Another famous cartoon who went along with the trend is Minnie Mouse, who is now also to be found on Instagram and Facebook. (VirtualHumans, n.d. ; Molenaar, 2022). Some virtual influencers are created with the goal to collaborate with multiple brands, while others are created for the promotion of one brand specifically. As a comparison, Lil Miquela is created by a company named "Brud", a transmedia studio (Block and Lovegrove, 2021). She has had collaborations with multiple brands, such as Samsung, Prada and Dior (Molenaar, 2022 ; Böhndel, Jastorff, Rudeloff, 2022). On the other hand, we can take Lu Do Magalu as an example, as she was created for the sole purpose of promoting Magazine Luiza in Brazil (Molenaar, 2022).

Even though virtual influencers are created through technology, their popularity has already been proven for both brands to partner up with them and social media users to follow them (Silva, Delfino, Cerqueira, de Oliveira Campos, 2022 ; Moustakas et al., 2020). The market of virtual influencers started off small in 2015, with only 9 virtual influencers back in the day. Last year in 2022, the market has reached over 200 virtual influencers (Hiort, 2022). With her 2.8 million followers on Instagram and 3.6 million followers on TikTok, Lil Miquela is currently the largest virtual influencer (Böhndel et al., 2022) and she was even listed as one of *the top 25 most influential people on the internet'* by Times in 2018 (Time staff, 2018).

Prior research has already proven the popularity of virtual influencers on Instagram with the public. Not only because of their large numbers of followers, but research also shows that the engagement rates on an Instagram post made by a virtual influencer is three times higher compared to a post made by a social media influencer (Baklanov, 2020 ; Geyser, 2022).

The increasing trend of brands willing to partner up with virtual influencers can be explained by multiple factors. The earlier mentioned risks of endorsing a human influencer can be prevented by collaborating with/creating a virtual influencer. Since virtual influencers are artificially created, there is full control over the social media posts and stories that are being posted (Sands et al., 2022). Additionally, a virtual character does not age unless the creator wants them to (Pojanavatee, 2022). Besides, there are no limits to what a virtual character can do. They can attend any event, at any place all over the world without travel costs (Wibawa, Pratiwi, Wahyono, Hidayat & Adiasari, 2022). Virtual influencers mainly gained their popularity during COVID, as they were not restricted to the rules of staying at home (Arsenynan & Mirowka, 2021).
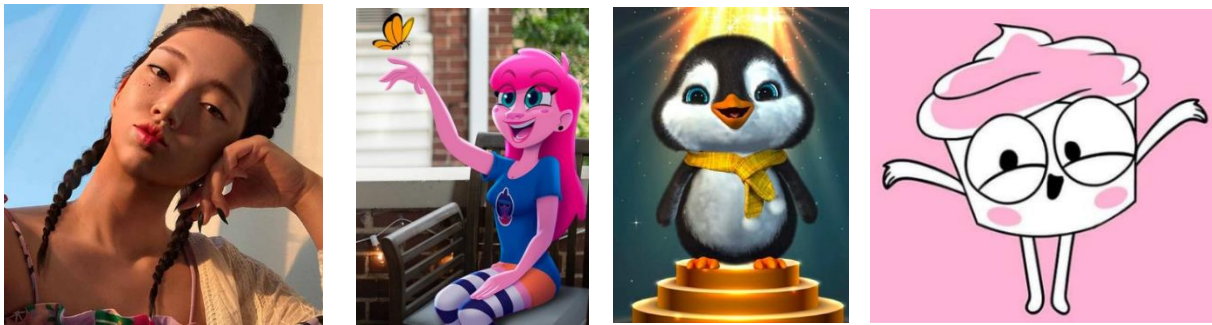
Figure 3: Different types of virtual influencers (VirtualHumans.org)

d. Virtual influencers in conservation marketing

While most virtual influencers have risen for the purpose of marketing products (Kim et al., 2023), few have put their focus on spreading awareness on the importance of conservation as well. Noonoouri6 is mainly a virtual fashion influencer, but she often brings up societal issues in her posts to make a change in subjects that are important to her. Noonoouri talks about subjects like Black Lives Matter and Pride Month, but also pollution and the importance of protecting animal species, as can be seen in Figure 4 (Iglhaut, 2019).

Another virtual influencer with relevance to conservation, is B.7 B is a virtual bee influencer from France who was created by Fondation de France. She posts about her daily life and trips, but mostly about her fight against pesticides. She actively encourages her 246.000 followers on Instagram to

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[6] www.instagram.com/noonoouri/

[7] www.instagram.com/bee_nfluencer/

engage with her and tries to get paid partnerships in order for BeeFund to gain more money, as is shown in figure 5 (Travers, 2020)

Figure 4: Noonoouri for the conservation of whales. Generated from noonoouri's Instagram

Figure 5: B. against pesticides. Generated from bee_nfluencer's Instagram

On the Edge Conservation, a charity organisation from England, has also established a virtual influencer. Their goal is to reconnect people with nature, and they put their focus on globally endangered species which do not receive enough attention from the public nor from conservation organisations (On the Edge Conservation, 2020). The organisation has created virtual influencers who can be found on Instagram and YouTube. These influencers are based on threatened species that are still very unknown to the general public. Like human Youtubers and influencers, the virtual influencers for On the EDGE will share their life through their channels from their own point of view (Travers, 2021 ; Verissimo, 2021). Each of the characters has their own story. Lexi the Aye-Aye[8] is an aspiring DJ, Tegan the Kakapo[9] is a partygirl and Eric the Mangolin[10] likes to share his facts with the world. This way, On the Edge wants to put these species in the spotlight and raise compassion from the public for them (On the Edge Conservation, 2020).

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[8] www.instagram.com/lexi_the_ayeaye/
[9] www.instagram.com/tegan_the_kakapo/
[10] www.instagram.com/eric_the_pangolin_/

Figure 6: The virtual influencers for On the Edge. (Instagram)

e. Choosing a fitting virtual influencer

Even though the popularity of virtual influencers is high, there are some important aspects to take into account when choosing to create or work with one. A study conducted by Arsenyan and Mirowska (2021) has found that human-like virtual influencers are generally perceived as more eerie than anime-like virtual influencers, which supports the Uncanny Valley Theory of Mori (1970). The Uncanny Valley Theory states that human-like objects can be perceived as eerie by the public when they consist of a certain degree of human likeliness. As quoted by Mori (1970/2012); "familiarity with a human-like objects increases until a point is reached at which subtle differences in appearance and behaviour create an unnerving effect". Movement in a human-like object makes the effects of the uncanny valley more intense. A visual representation of the Uncanny Valley Theory can be seen in figure 7. The figure shows a non-linear effect with a drop in affinity when the uncanny valley happens. The slopes of the uncanny valley become more steep when movement is involved for the human-like objects (Mori, 1970 ; MacDorman, 2005).
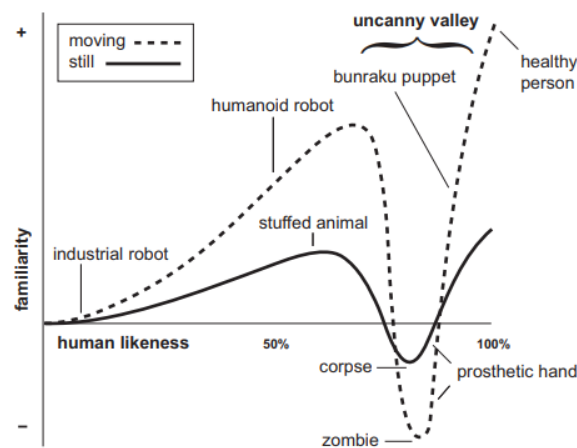

Figure 7: The Uncanny Valley Theory by Mori shown graphically, simplified and translated by MacDorman (2005)

With the rise of robots, AI and now also virtual influencers, the Uncanny Valley Theory has gained in importance and should be taken into account in order to avoid a negative public perception when using virtual influencers in a strategy (Mori, MacDorman and Kageki, 2012). However, even though the Uncanny Valley Theory states that making digital characters too human-like makes the public create negative feelings towards the characters (Mori, 2012), there are also contradicting studies proving that an anthropomorphic presence is needed in order for the character to be considered credible and for the public to feel the tendency to engage with them (Miao, Kozlenkova, Wang, Tao, Palmatier, 2021). The right balance needs to be found in order to create an anthropomorphic character that does not fall into the uncanny valley. Prior research by Schwind, Wolf & Henze (2018) has focused on how to avoid this uncanny valley when designing virtual characters. Guidelines for the creation of virtual characters were created in their research, which can be applied to the use of virtual influencers in all kinds of marketing:

- When the virtual character (either human-like or animal-like) is made to be very realistic, avoid untypicalities for the character as this would create the uncanny valley. For unrealistic characters, the effect of adding untypicalities would not be as large. A concrete example given in the research of Schwind et al. (2018), is to avoid a non-human feature when using a highly detailed skin texture.
- Realism of the eyes is important. A study conducted by Schwind et al. (2018) found that "dead eyes" create an eerie feeling towards the virtual character.
- Physical attractiveness will help to avoid the uncanny valley. However, the character should not be completely perfect. Small imperfections make a character more appealing to the public. This result was also found in a study conducted by Lou et al. (2022). Additionally, when a character is made to be too perfect, ethical issues rise concerning the promotion of unrealistic beauty expectations (Sands et al., 2022).

f. Relationships with virtual influencers

In order for a virtual influencer to engage their followers to participate in conservation efforts while learning about them, a relationship should be built between the two parties. There are two types of relationships that can be formed with a (virtual) influencer in order to get a high level of involvement: a parasocial relationship (Block and Lovegrove, 2021) or identification (Kelman, 1961; Brown, 2003).

A parasocial relationship can be defined as the perception of a real friendship between a media consumer and a media persona, in the mind of the media consumer (Brown, 2010). The public is generally more easily influenced by friends and family. Creating a parasocial relationship and thus making them perceive the virtual influencer as a friend, will therefore help to increase the influence the virtual influencer has on its followers (Gammoudi, Sendi, & Omri, 2022).

Deeper than the parasocial relationships, is the identification process of a social media consumer towards an influencer. Where in a parasocial relationship the influencer is perceived as a friend, the process of identification means that the social media consumer will copy the behaviour, beliefs and attitudes of an influencer (Kelman, 1961). The consumer wants to maintain a relationship with the influencer, and copies their behaviour in an attempt to do so (Brown, 2003 ; Brown, 2010). In order

to truly get social change to happen within the public, identification with the (virtual) influencer is needed rather than only build a parasocial relationship (Brown & Bocarnea, 2006). This means that in order for conservation marketing through the use of a (virtual) influencer to be effective, identification is needed. However, a parasocial relationship is still relevant to this study as well. According to Brown & Bocarnea (2006), parasocial interactions can predict a possible identification process to happen later on.

With these theories, it is useful to know how to build such a relationship between a virtual influencer and social media consumers in order for the conservation messages to have an impact on the followers. Prior research has already found multiple aspects that decide whether or not a person will try and build a relationship with an influencer (Pojavanatee, 2022 ; Brown, 2015 ; Moustakas et al., 2020). These aspects the following:

- People are generally more tempted to form a relationship with someone they are attracted to, or who they feel a certain degree of similarity with (Brown, 2015).
- The FIT between the influencer and the topic they talk about is an important aspect. Prior research has shown that the effectiveness of the endorsement of a (virtual) influencer depends largely on the fit between the endorsed person/character (their personality and expertise) and the advertised product or subject (Schouten et al., 2020). In the case of this research, the virtual influencer has to be seen as an expert on conservation in order for it to have the right effect on its followers.
- With the differences between human influencers and virtual influencers becoming smaller, the need for transparency becomes greater. As found in a study by Sands et al., (2022), consumers want to know the motivations and values of a virtual influencer promoting a certain object. The artificial nature of the virtual influencer increases the need to show authenticity. The consumer wants to be sure that the virtual influencer can be considered as authentic to build a real connection (Sands et al., 2022; Moustakas et al., 2020).
- The relationship between a (virtual) influencer and the social media consumer is strengthened when both parties have the same interests and values. Research by Pojanavatee (2022) has found that when the values between both the social media influencer and the social media consumer are aligned, the desire for the consumer to engage with the influencer increases. Additionally, a high value homophily might lead to the desire for the social media consumer to imitate the influencer in behaviour. This result was found both for virtual influencers (Pojanavatee, 2022) and human influencers (Xiao, Saleem, Tariq, Ul Haq, Guo 2021).

When a relationship between a (virtual) influencer and a social media consumer is starting to develop, it is important to maintain this as well. A study by Mrad et al. (2022) recommends to post content that is both entertaining and has a social impact in order to maintain the relationship.

The matter of authenticity of virtual influencers may rise some concern towards the effectiveness of using them for conservation marketing. Especially in the promotion of products, the authenticity of virtual influencers forms an issue. As found in a study by Lou et al. (2022), where it is quoted: "they are not even real, how can they test a product?". However, the same study found that when the virtual influencer promotes something that lies withing their expertise (music was given as an

example in their study), it is perceived as more authentic. This relates closer to the idea of using virtual influencers for conservation marketing, as the goal would not be to promote products but to educate and engage the followers. In addition, in a study conducted by Moustakas et al. (2020) it is stated that "the use of VR should be problem focussed", which is in line with the rising issues of endangered species and other sustainability issues.

3. Relevance of the study

With the rising issues concerning animal species and habitats going extinct, global warming, overpopulation and overconsumption, conservation marketing has increased in importance. Despite the threats of these events being well known, efforts made to slow them down seem to be insufficient so far (Millard, Gregory, Jones and Freeman, 2021). Conservation marketing aims to educate and engage the public to act with the purpose of slowing down or preventing animal species and their habitats going extinct (Barongi et al., 2015).

A new rising trend is the use of virtual influencers for the promotion of products, events or organizations. Given their high engagement rates on mostly Instagram and TikTok (Baklanov, 2020), conservation institutions are starting to get along with the trend and use virtual influencers for raising awareness, educating and engaging the public. More and more NGO's collaborate with influencers to get their messages through to the public (Verissimo, 2021). With the use of virtual influencers, the organization could have full control over the messages that are being spread and they would be following up on the latest trend in marketing. Multiple studies have already investigated the effectiveness of virtual influencers in a general (business) context (Moustakas et al., 2020 ; Sands et al., 2022 ; Kim et al., 2023). However, research focussed on creating and using a virtual influencer for the main purpose of biodiversity conservation does not yet exist. This research aims to fill that gap and measures the effectiveness and the perceived differences between a human influencer and virtual influencers in the context of conservation. With the results of this research, a more effective way of conservation marketing could be brought to the public and as a result increase the engagement and investment of the public towards the subject of biodiversity conservation.

4. Research questions and hypotheses

Both the endorsement of a human influencer and the creation of a virtual influencer comes with a series of benefits and drawbacks. To measure the effectiveness for conservation marketing, it is important to know how the public perceives a message about conservation written by the different influencer types. Moreover, the aim is to find out whether or not there is a difference in how the message is perceived by the public when the two influencer types are compared to each other. This leads to the first research question of the study, being:

RQ1: Does the endorsement of a virtual influencer make a difference in the way a conservation message is perceived by the public compared to when a human influencer is endorsed?

Secondly, it is investigated whether or not the public will show (additional) support towards conservation due to the messages being spread by a (virtual) influencer. The aim is to find out whether endorsing an influencer (either human or virtual) increases support towards conservation significantly compared to having no influencer endorsed. This leads to the following research question:

RQ2: Will the endorsement of a (virtual) influencer for conservation marketing increase the public's support towards conservation?

Being involved with the (virtual) influencer is an important aspect for the conservation message to have an impact on the followers. When they are more involved, they are more inclined to copy the behaviour they see in the influencer (Brown, 2010). For conservation purposes, the adaptation of behaviour from a (virtual) influencer can lead to opportunities in terms of engaging the public. This leads to the final research question:

RQ3: Does the public have a preferred influencer type in terms of copying behaviour towards conservation programs?

Based on these three research questions, the following hypotheses are set up to be tested:

H1: the endorsement of a virtual influencer will make a conservation message be perceived differently in terms of trustworthiness compared to having a human influencer endorsed.

H2: a conservation message is perceived as more authentic when it comes from a virtual influencer created for conservation compared to when it comes from an endorsed human influencer.

H3: the use of a human(a)/virtual(b) influencer for conservation marketing increases the public's intention to donate towards conservation more than having no influencer endorsed.

H4: the public's intention to support conservation is different when a virtual influencer is created compared to when a human influencer is endorsed.

H5: the public is more eager to copy behaviour for conservation purposes when there is a human(a)/virtual(b) influencer endorsed compared to when no influencer is endorsed.

5. Methodology

Given the popularity of virtual influencers on Instagram (Sands et al., 2022), combined with the platform being a highly visual one containing photos and videos with a caption, this study will focus on (virtual) influencers on Instagram specifically. Research has also proven that the engagement rates on Instagram are high (Casaló, Flavián & Ibáñez Sánchez, 2020). This adds to the decision to use Instagram as a focus point for the study, as prior research has proven that engagement is important in conservation learning (Gregg et al., 2022).

The research started off with an extensive literature review. Given the subject of virtual influencers, multiple different search words have been used to get as many results as possible about it. These search words included "virtual influencers", "CGI influencers", "AI influencers" and "avatar marketing". For information about marketing trends, influencers and virtual influencers, the papers used are mostly no older than 5 years old as marketing trends and technology changes fast. When possible, research between 2020 and 2023 was chosen dependent on the availability of them. The main source for accessing research was ResearchGate, but also the online UHasselt library and ProQuest were used.

After the literature review, three different surveys were made. The surveys focus on finding a causal effect between virtual influencers and conservation marketing on one hand, and human influencers and conservation on the other hand. One survey only contains text about biodiversity conservation and the importance of it, trying to get the respondent more involved and wanting to engage with it. The survey mentions that this text was taken from a blog on a conservation, but does not mention which blog to avoid bias as the influencers are also not related to an organisation. This was avoided to prevent legal or privacy issues. The other two surveys contain the exact same text, however one gives the impression that this text was written by a human influencer and the other one by an animal-shaped virtual influencer. The questions for each survey are the same, and started off with asking for the respondents' age and gender, followed by their social media usage (which platforms the respondent uses and how often). The respondents were also asked whether or not they follow influencers on social media and, if yes, what kind of influencers they follow on which platform(s). To end the introduction questions, the respondents were asked whether or not they donate to conservation and why they did (not).

After the introduction questions, the respondents were shown one of the three survey types. These three survey types were distributed randomly to ensure the validity of the results. Either they saw the human influencer or the virtual influencer and a text, or they saw the text only. The next series of questions in the survey focussed on the text they have seen.

To find out whether the respondent will be able to form a relationship with the (virtual) influencer or the person who wrote the text, the questions will follow the CPI model by Brown and Bocarnea (2006). The CPI model was created to study to what extent an individual has created a self-defined relationship with a celebrity (or influencer) and is willing to change their behaviour due to this relationship. The full CPI model can be found in appendix A. The questions were to be answered on a 5 point Likert scale, as this was done the same way in Brown and Bocarnea's (2006) research.

Some questions of the CPI model were left out of this survey as those were only possible for real people the public is already familiar with. 16 out of 20 questions from the CPI model were used in the survey.

Following up on the CPI model were questions only for the surveys containing the human influencer or the virtual influencer. These questions were based on the endorser credibility scale from Schouten et al. (2020) and aimed to find out whether or not the influencer is perceived as trustworthy and has the required level of expertise. Even though Schouten et al. (2020) used a semantic differential scale in their study, a 5 point Likert scale was chosen for this one in order to maintain consistency throughout the questions.

The survey ends with the question whether or not the intention to donate has changed based on the text the respondent has seen in the survey. This question was added based on the survey design in Schouten et al. (2020). This question is added to simply give an indication on whether or not it is worth investigating in the future, and does not give scientific proof that the behaviour of the respondent will actually change. With the different surveys, this would help to give an idea on the effect of endorsing an influencer towards the intention to donate to conservation.

Table 2 shows the main questions of the survey that will be used for the hypotheses testing. The full survey, which includes introduction questions and some follow-up questions to get more insights, can be found in appendix B.

Identification with the influencer/writer of the text.	I feel like this person and I share the same values.
	What is important to this person is important to me.
	I try to do the things I believe this person would do.
	This person has shown me the best way to live my life.
	I care about the same things this person cares about.
	I look to this person as a role model.
	I support those who support this person.
	I would like to be more like this person.
	This person has set an example for me of how to think and act.
	I want to learn from this person as much as I can.
	I believe many of the same things this person believes.
	I feel like I am in unity with this person.
	I aspire to become the kind of person the writer of this text is.
	The qualities I see in this person are the same qualities I seek to develop in my own life.
	I advocate the same things this person advocates.
	The things that make this person upset make me upset.
Perception of the (virtual) influencer. (Only shown in the surveys containing an influencer)	I believe this person to be honest.
	I believe this person to be reliable.
	I believe this person to be sincere.
	I believe this person to be trustworthy.
	I believe this person to be an expert on the topic.

	I believe this person to be experienced in this topic.
	I believe this person to be knowledgeable on this topic.
	I believe this person to be qualified for this topic
	I believe this person to be skilled for this topic.
	I believe this person is the right messenger to bring this text.
	This message makes me want to change my behaviour towards conservation.
Intention to donate.	After seeing these messages, how likely are you to start donating to a conservation programme?

Table 2: main questions in the survey

After the survey, the aim is to find out if there are any significant differences between the respondents who had no influencer in the survey, those who had a human influencer and those with a virtual influencer in the survey. The different survey designs were distributed randomly over the respondents.

Given the earlier-mentioned Uncanny Valley Theory by Mori (1970), combined with the main subject being conservation, an animal-like virtual influencer will be used as the virtual influencer for this study rather than a human-like virtual influencer. The virtual influencer was based on a red panda. This red panda was chosen as it is one of the flagship species (Jarić et al., 2023), and it is not a frequently used character for conservation organisations.

Both the virtual influencer and human influencer accounts are not real and were created with the sole purpose of conducting this study. The Instagram biography and followers count of both the virtual influencer and the human influencer have remained the same as much as possible, with one small adaptation for the virtual influencer. This biography says that the character is created specifically for conservation. Figures 8 and 9 show the created Instagram accounts for this research.

Dependent on the survey that was shown to the respondent, they either were introduced to one of the accounts followed by a zoom-in on the latest post or were shown the text only. The text shown was the same text as was added to the influencers' post, only the hashtags were removed for the text-only survey. To add a certain level of expertise to the text, the survey mentions that it got derived from the blog of a conservation organization. The text can be found in Figure 10, which displays the influencers' posts like they were shown in the survey. The text was created by AI (ChatGPT), with the request to have a small psychological distance in the text and aiming to motivate the reader.

The research focusses on people between 12-35 years old, as these are the most active social media consumers (Dixon, 2022). To reach them, the survey was distributed mainly through Instagram. A post on Linked-In with the request to fill in the survey was also made, and an E-mail was sent out to all students of Hasselt University with the link to the survey. Only when not enough respondents were gathered through Instagram, a Facebook post was created as well. A combination of convenience sampling with snowball sampling was used, as friends on both Facebook and Instagram were asked to share the survey.
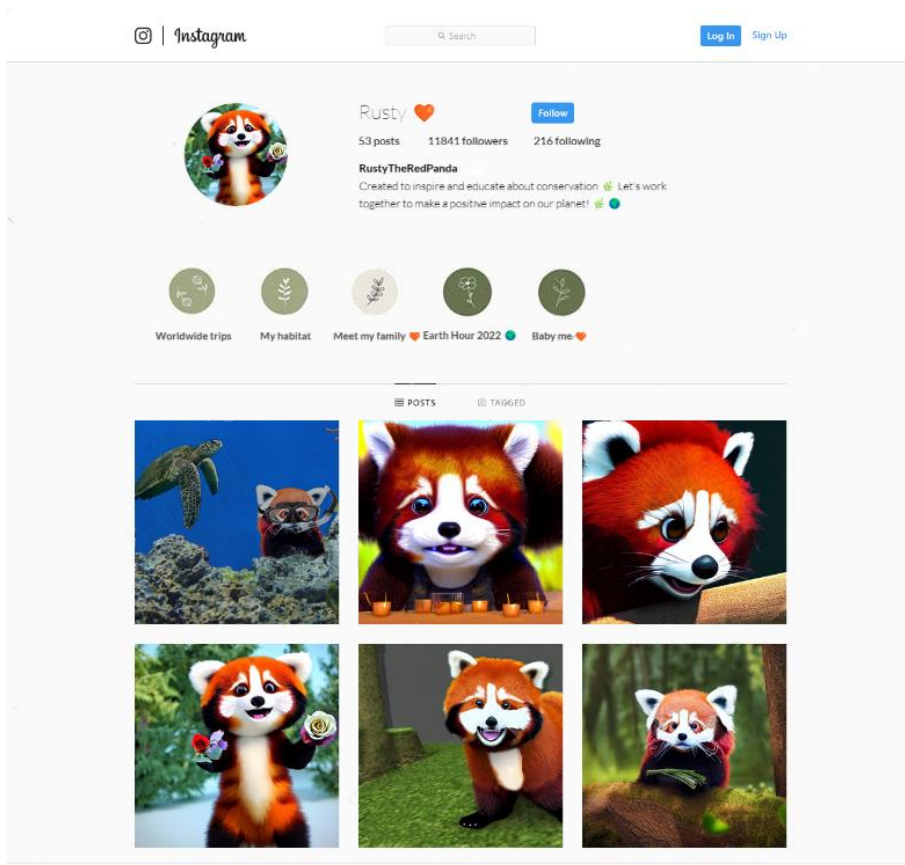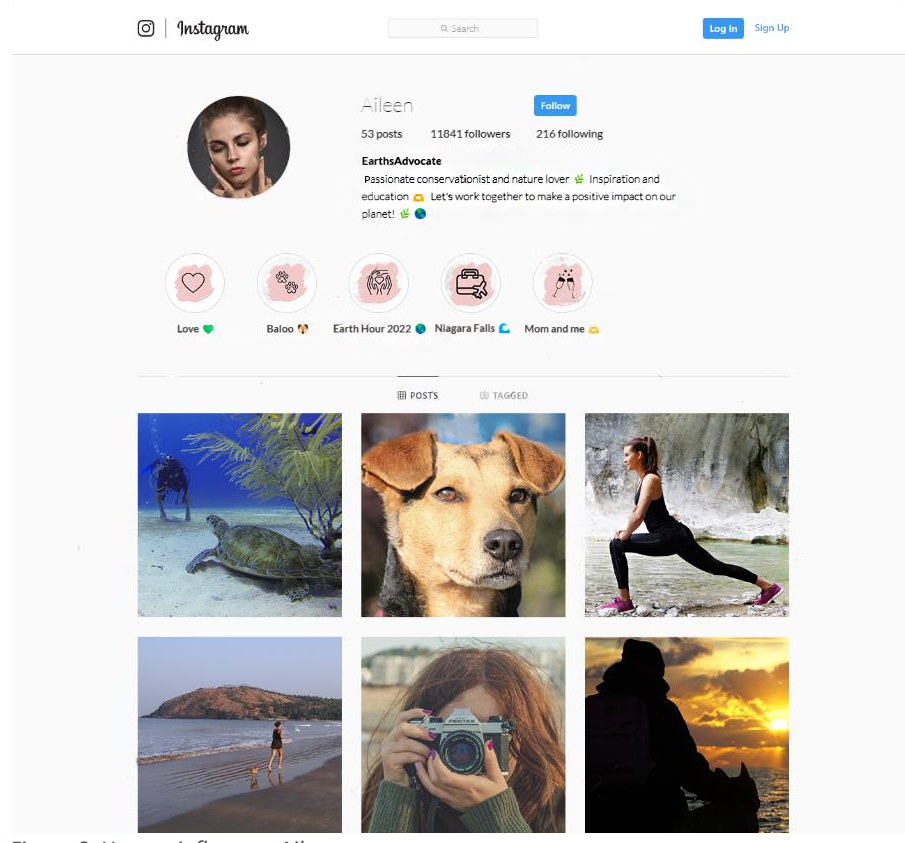
Figure 8: Virtual influencer Rusty

Figure 9: Human influencer Aileen

Rusty 🧡

❤️ 💬 ✈️   🔖

8012 likes

Rusty 🧡 Have you ever thought about how amazing sea turtles are? 🐢 These beautiful creatures have been swimming in our oceans for millions of years. Unfortunately, their populations are in danger due to human activity.

Sea turtles play a crucial role in maintaining healthy marine ecosystems, including coral reefs and seagrass beds, which provide habitat for many other marine species. By protecting sea turtles, we can promote the health of our oceans and ensure that they continue to support life.

Not only that, but sea turtles are also an iconic species that inspire us to care about the environment. They are a symbol of our connection to nature and remind us of our responsibility to protect the planet for future generations.

So, what can we do to help? Simple changes, like reducing our use of single-use plastics, supporting organizations that work to protect sea turtles and their habitats, and being mindful of our impact on the environment, can make a huge difference.

Multiple programs have risen to protect the sea turtle, but they need your help! Share their cause, follow their stories or whenever possible, give a donation. A small donation can already make a big difference. Join our community and help the sea turtles. You as an individual can make a change for their survival.

Let's work together to protect these beautiful animals and preserve our natural heritage. By taking action, we can ensure that sea turtles continue to swim in our oceans for generations to come. Remember, every little action counts! #savetheseaturtles #protecttheocean #conservation #environmentallyconscious #ecofriendly

View all 36 comment

Figure 10: Text included in the survey

Aileen

❤️ 💬 ✈️   🔖

8012 likes

Aileen Have you ever thought about how amazing sea turtles are? 🐢 These beautiful creatures have been swimming in our oceans for millions of years. Unfortunately, their populations are in danger due to human activity.

Sea turtles play a crucial role in maintaining healthy marine ecosystems, including coral reefs and seagrass beds, which provide habitat for many other marine species. By protecting sea turtles, we can promote the health of our oceans and ensure that they continue to support life.

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Multiple programs have risen to protect the sea turtle, but they need your help! Share their cause, follow their stories or whenever possible, give a donation. A small donation can already make a big difference. Join our community and help the sea turtles. You as an individual can make a change for their survival.

Let's work together to protect these beautiful animals and preserve our natural heritage. By taking action, we can ensure that sea turtles continue to swim in our oceans for generations to come. Remember, every little action counts! #savetheseaturtles #protecttheocean #conservation #environmentallyconscious #ecofriendly

View all 36 comment

6. Results

Once the data was collected, IBM SPSS was used to run statistical tests on the data. First, some general tests were done to verify the consistency and adequacy of the survey experiment. After that, multiple tests were done to test the hypotheses and find potential significant differences between the three survey types.

a. Sample demographics

The aim for the experiment was to gather 40 respondents per survey type. This resulted in a total of 120 respondents needed, as three different surveys were sent out. A total of 258 respondents were collected. 90 of these survey respondents did not finish their survey which resulted in incomplete data. Therefore, those data were deleted. The 7 preview surveys to check and test the survey before sending it out to the public were also deleted. Out of those who were left, 36 respondents were aged over 35 years, and therefore not relevant for this study. This data was also deleted, resulting in a new total of 125 respondents. Out of those respondents, 40 people received the survey with human influencer "Aileen", 43 received the text-only survey and 42 respondents received the virtual influencer "Rusty". The survey types were equally randomized by Qualtrics. Out of the 125 respondents of which the data is used, there were 48 males and 73 females. Three people indicated to be non-binary/third gender, and one person indicated to prefer not sharing their gender.

b. Social media usage

The respondents were asked a few questions about their social media consumption. Most of them indicated to spend 1-3 hours on social media daily (56 respondents). 50 respondents indicated to spend 4-5 hours on social media on a daily basis. The other options (less than one, 6-8 and more than 8) were chosen the least. A total of 115 respondents indicated to use Instagram on a daily basis, making it the most indicated social media channel of this survey. These results prove that Instagram is the most popular social media channel for people in the selected age category, and supports the decision to use an influencer active on Instagram for this experiment. Table 3 shows the total number of respondents for each social media channel on the question "which of the following social media channels do you use on a daily basis?".

Social media channel	Total	Percentage
Instagram	115	92%
Facebook	84	67.2%
Twitter	28	22.4%
YouTube	64	51.2%
TikTok	62	49.6%
LinkedIn	22	17.6%
Snapchat	63	50.4%

Table 3: use of social media channels

The option "other" was chosen by nine of the respondents. These other social media channels are: BeReal (1), Discord (1), Pinterest (1), Tinder (1), Twitch (2) and WhatsApp (1). It is to be noted that even though Twitch has social media features, it is not an actual social media platform.

The next question wanted to find the main reason for the respondents to spend time on social media. Most of the respondents answered to be on social media for entertainment purposes mainly, or to pass time. Table 4 shows the motivation for the respondents to be on social media. The options that were given with this question are derived from Kemp, 2023.

Reason for social media usage	Total	Percentage
Entertainment	115	92%
Education	52	41.6%
To stay in touch with friends and family	89	71.2%
To pass time	90	72%
To know about the latest news	46	36.8%
To share my opinion with others	13	10.4%
To know about trending topics	36	28.8%
To make new friends	15	12%

Table 4: reasons for social media consumption

For this question, three respondents answered to have another reason for using social media. These three other reasons are: business, procrastination and work.

With the topic of influencers in this research, the next question aimed to find out whether or not the respondents follow influencers on social media, which platform they use to follow them and what kind of influencers they follow. Table 5 shows the results of these series of questions.

It is worth noting that only 4 of the respondents indicated to be following a virtual influencer on social media, out of the 94 that do follow influencers. Out of those people who follow a virtual influencer, there were 3 males and 1 female. The most followed influencer types within the respondents of the survey are food influencers, lifestyle influencers and celebrity influencers.

The most used social media platform to follow influencers is through Instagram, which confirms earlier findings from the literature study that Instagram is the most popular to follow influencers on. YouTube is used to follow influencers by 42 respondents, and TikTok by 37.

Category	Answer	Total	Percentage
Following influencer(s) on social media	Yes	94	75.2%
	No	31	24.8%
Platform used to follow these influencers	Instagram	85	68.0%
	Facebook	23	18.4%
	Twitter	6	4.8%
	YouTube	42	33.6%
	TikTok	37	29.6%
	LinkedIn	2	1.6%
	Snapchat	5	4.0%
	Other (Twitch)	2	1.6%
Types of influencer(s)	Fashion influencer	35	28.0%
	Lifestyle influencer	44	35.2%
	Food influencer	46	36.8%
	Sports influencer	37	29.6%
	Sustainability influencer	12	9.6%
	Veggie/vegan influencer	13	10.4%
	Beauty influencer	23	18.4%
	Travel influencer	34	27.2%
	Virtual influencer	4	3.2%
	Gaming influencer	26	20.8%
	Celebrity influencer	41	32.8%
	Pet influencer	30	24.0%

Table 5: results of the respondents towards influencers

c. Donation to conservation

The respondents were asked whether or not they donate to a conservation programme, and additionally why they (don't) donate. 111 of the respondents indicated not to donate to a conservation programme, and 14 indicate that they do donate. For those who donate, the most indicated reason is: "I worry about the effects on biodiversity when certain animal species go extinct". The options that came with this question are derived from Admiraal et al., 2017. For those who do not donate, the main reason not to is: "I am not able to financially support conservation", which was chosen by 6O of the respondents. All answers and the frequency of those answers can be found in table 6.

For the respondents not donating, there were three other reasons given. One respondent said to not give a monthly donation, but a one-time donation when coming across an advertisement of PETA. Two other respondents answered to not be aware what a conservation programme is.

Question	Answer	Total	Percentage
Do you donate to a conservation programme?	Yes	14	11.2%
	No	111	88.8%
What are the reasons for you to donate to a conservation programme?	I believe it is my responsibility to do so	2	1.6%
	I worry about the effects on biodiversity when certain animal species go extinct	6	4.8%
	My friends/family do it too	1	0.8%
	It is in line with my moral values	5	4.0%
	For the future generations to be able to enjoy biodiversity	3	2.4%
What are the reasons for you not to donate to a conservation programme?	I am not aware of the need for donations in conservation	27	21.6%
	I am not able to financially support conservation	62	49.6%
	I have no interest in the conservation of animal species	7	5.6%
	I do not trust the organisations to use my donations correctly	30	24.0%

Table 6: donation behaviour of the respondents

Given the topic of this thesis being about a link between influencers and the public supporting conservation, it is worth noting that out of the 12 respondents who indicated to follow a sustainability influencer, only three of them donate to a conservation programme.

d. Factor analysis

In the survey, 16 questions focussed on finding out whether or not the respondent would be able to form a relationship with the (virtual) influencer or the writer of the text. Those questions are based on the CPI model (Brown and Bocarnea, 2006), of which 16 out of 20 questions were taken. The next series of 10 questions was only shown to the surveys containing one of the influencer types and aimed to find out whether the (virtual) influencer is perceived to be trustworthy and how the respondents perceive their level of expertise. The two series of questions are kept separate in the factor analysis as the text-only survey did not include the second series about the perception of the (virtual) influencer. It was assumed that multiple variables could be taken together to form one or more underlying factor(s). A factor analysis was done to find whether the questions go together and form a new variable for the remainder of the data analysis, based on the following factor hypotheses:

H0: there are no underlying factors in the data

H1: there are underlying factors in the data

Before conducting the factor analysis, the data of all three survey types is checked for normality in order to determine which analysis to use. The Shapiro-Wilk test is conducted to assess normality, as this test can handle sample sizes between 50 and 2000 respondents (Laerd statistics, n.d.).

The P-value derived from the Shapiro-Wilk test is smaller than 0.05 for all of the variables that will be included in the factor analysis. All values range between <0.001 and 0.005, no matter the survey type. This proves that the data does not follow a normal distribution (Laerd statistics, n.d.). A principal component factor analysis is thus conducted, as this is a non-parametric version of factor analysis and does not require normal distribution of the data (Carvajal, Arias, Garces & Sbarbaro, 2016).

First of all, the principal component factor analysis is conducted for the first series of questions which aim to find out whether or not the respondents would be able to form a relationship with the (virtual) influencer or the writer of the text. The PCA was conducted in SPSS and derived a KMO value of 0.920, meaning the sampling is adequate. KMO should be at least 0.80 in order for the sampling to be adequate, and the closer to 1 the value goes, the more adequate the sampling is. (Chetty, 2022 ; Heidel, n.d.) These results also show that the Bartlett's test of Sphericity has a P-value of <0.001. Since <0.001 is smaller than 0.05, the null hypothesis can be rejected for these series of questions and thus a PCA can be conducted to find underlying factors in these variables (Heidel, n.d.)

Based on these findings, the Eigenvalues are checked. Eigenvalue is the definition of the amount of variance that is explained by a factor, and the variance explains how much your variable differs from the average (Qualtrics, 2022). The factor analysis shows that the first series of questions has two Eigenvalues above one, which means that the first series of questions are allowed to be combined into two new factors (Heidel, n.d.). Figure 10 shows the scree plot of the conducted factor analysis for the first series of questions, which visually shows two Eigenvalues above one and thus two underlying factors. A direct Oblimin rotation method was used (as this method is most common to use in combination with the principal component analysis) to assign the variables to the correct

factor, and values below 0.40 were excluded. The results of the rotation can be found in table 7. In these results, it can be seen that there is cross-loaded variable meaning that this variable can be assigned to both factors. These variables are assigned to the factor with the highest communalities (Qualtrics, 2022). The full results of the factor analysis can be found in appendix C.
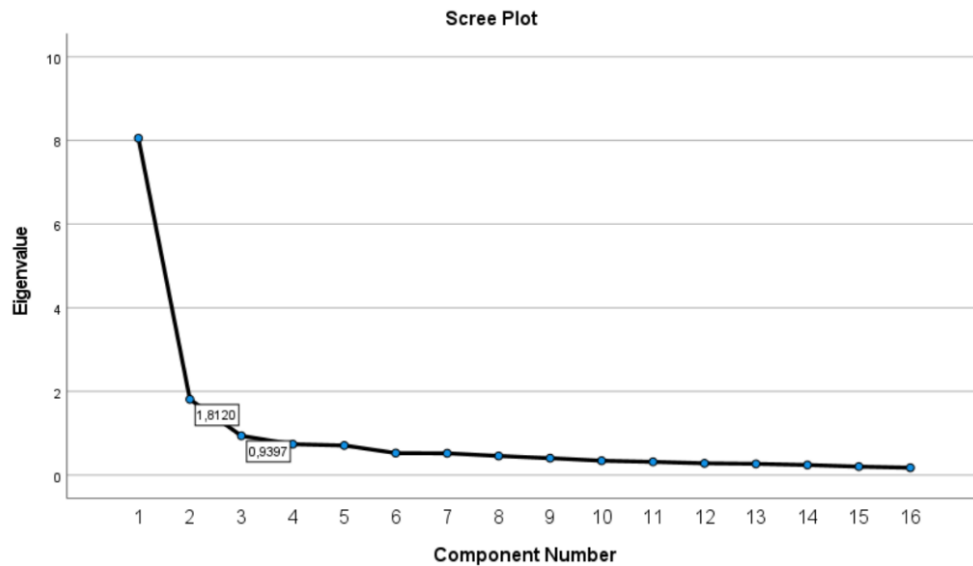
Figure 11: results of factor analysis of the first series of questions

	Component 1	Component 2
I feel like this person and I share the same values	0.794	
What is important to this person is important to me	0.905	
I try to do the things I believe this person would do	0.477	
This person has shown me the best ways to live my life		0.731
I care about the same things this person cares about	0.868	
I look to this person as a role model		0.890
I would like to be more like this person		0.760
This person has set an example for me of how to think and act		0.865
I want to learn from this person as much as I can		0.641
I believe many of the same things this person believes	0.812	
I feel like I am in unity with this person	0.430	0.437
I aspire to become the kind of person the writer of the text is		0.821
The qualities I see in this person are the same qualities I seek to develop in my own life		0.670
I advocate the same things this person advocates	0.857	
The things that make this person upset make me upset	0.685	

Table 7: results of the rotation in the first factor analysis

For the first series of questions, the following factors are derived from the variables:

"I look to this person as a role model"

"This person has set an example for me of how to think and act"

"I aspire to become the kind of person the writer of the text is"

"The qualities I see in this person are the same qualities I seek to develop in my own life" ⎫

"I would like to be more like this person" ⎬ Intention to copy the person

"This person has shown me the best way to live my life" ⎭

"I want to learn from this person as much as I can"

"I feel like I am in unity with this person"

"I feel like this person and I share the same values

"What is important to this person is important to me"

"I try to do the things I believe this person would do" ⎫

"I care about the same thing this person cares about" ⎬ Shared values

"I believe many of the same things this person believes" ⎭

"I advocate the same things this person advocates"

"The things that make this person upset make me upset"

With these factors defined, the second series of questions are processed. These series of questions obtained a KMO value of 0.913 which proves these questions to have an adequate sampling as well. The Bartlett's test of Sphericity obtained a P-value of <0.001. Since this value is smaller than 0.05, the null-hypothesis can be rejected and thus underlying factors can be found for this series of questions.

Looking at the Eigenvalues, there are again two Eigenvalues greater than one. Therefore, two factor can be derived from the variables obtained in this series of questions. Figure 11 shows the scree plot of the factor analysis belonging to these questions. In table 8, the results of the Direct Oblimin rotation results are shown. This table shows which variable is assigned to which factor.
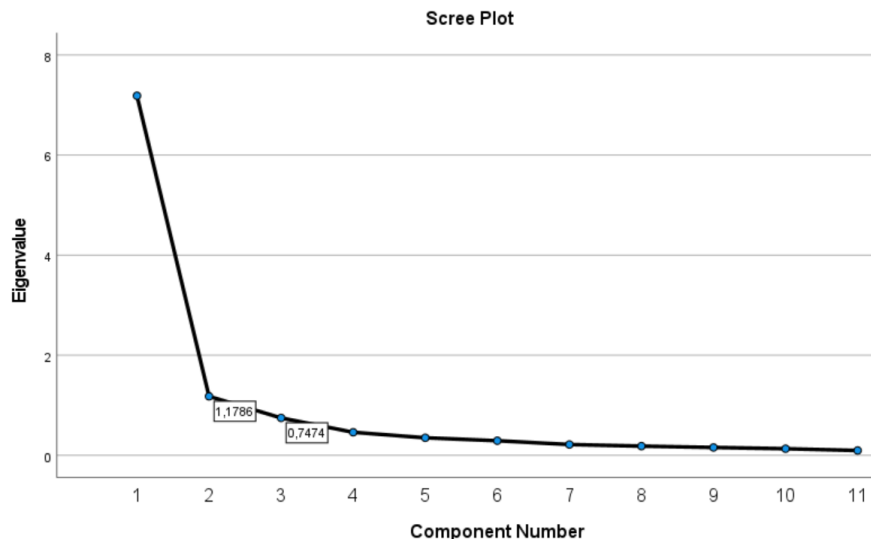
Figure 12: results of the factor analysis second series of questions

	Component 1	Component 2
I believe this person to be honest		0.994
I believe this person to be reliable		0.904
I believe this person to be sincere		0.841
I believe this person to be trustworthy		0.841
I believe this person to be an expert on the topic	0.871	
I believe this person to be experienced in this topic	0.871	
I believe this person to be knowledgeable	0.616	
I believe this person to be qualified for this topic	1.043	
I believe this person to be skilled for this topic	0.839	
I believe this person is the right messenger to bring this text	0.595	

Table 8: results of the rotation in the second factor analysis

For the second series of questions, the following factors are created:

"I believe this person to be honest"

"I believe this person to be reliable"

"I believe this person to be sincere"

"I believe this person to be trustworthy"

Trustworthiness of the (virtual) influencer

"I believe this person to be an expert of the topic"

"I believe this person to be experienced in this topic"

"I believe this person to be knowledgeable on this topic"

"I believe this person is qualified for this topic"

"I believe this person to be skilled for the topic"

"I believe this person is the right messenger to bring this text"

Perceived level of expertise of (virtual) influencer

The four new factors are created in SPSS through the 'compute variable' function. The mean of the variables was taken and put into their new factors.

After having these four new factors created, Cronbach's alpha was calculated to check the reliability of the factors. The baseline of the Cronbach's alpha is 0.7 in order for the factors to be reliable, and the closer the value gets to 1, the more reliable the data is (Frost, 2022). The calculated Cronbach's alpha for the factors created for this study is .876 which proves the reliability of the data.

e. Descriptive statistics

The data now consists of four factors, being the intention to copy the person (writer of the text/(virtual) influencer), shared values, trustworthiness of the (virtual) influencer and the perceived level of expertise of the (virtual) influencer. The variables included in these factors were all measured on a 1-5 Likert scale. To give a clear overview of the results, the outcome of the three survey types are displayed separately. The descriptive statistics for all three survey types can be found in table 7.

The results show that for all three survey types, the mean of all four factors is above 2.5. This shows that most of the respondents agreed with the statements given, no matter the survey type they received. Even though the means of the data are close to each other, the minimum and maximum statistics show differences in the range of answers given between different survey types.

Skewness and Kurtosis give insights into the distribution of the data. Skewness calculates the degree of asymmetry of the curve when the data would be visualized in a graph. For the virtual influencer, all measures of skewness are negative, meaning that most scores are above the mean of the variable. There are two positive measures of skewness, being the 'intention to copy this person' for the human influencer and for the text only survey. These measures show that for these two factors, most scores are lower than the mean. For all other factors for both the human influencer and the text only, most of the scores are above the mean The Kurtosis gives insights in how the data is centred around the mean. Table 9 shows both positive and negative measurements of kurtosis. A positive kurtosis shows that most values are centred around the mean, while a negative kurtosis means that the values are widely distributed (Meyers, 2013).

		Min. statistic	Max. statistic	Sample	Mean	Skewness	Kurtosis
Virtual influencer	Intention to copy this person	1.00	4.13	42	2.8512	-.466	-.686
	Shared values	1.00	5.00	42	3.3810	-.451	.257
	Trustworthiness	1.00	5.00	42	3.6012	-.448	-.077
	Perception of expertise	1.00	5.00	42	3.3651	-.499	-.480

Human influencer	Intention to copy this person	1.75	3.88	40	2.7219	.038	-1.301
	Shared values	1.86	5.00	40	3.4357	-.451	-.026
	Trustworthiness	1.50	5.00	40	3.6813	-.598	.494
	Perception of expertise	1.51	4.67	40	3.0958	-.069	-.533
Text only	Intention to copy this person	1.25	4.63	43	2.8401	.219	.168
	Shared values	2.43	4.86	43	3.5947	-.425	.709
	Trustworthiness	/	/	/	/	/	/
	Perception of expertise	/	/	/	/	/	/

Table 9: descriptive statistics

f. Hypotheses testing

For the first hypothesis, it is checked whether the endorsement of a virtual influencer makes a conservation message be perceived as more trustworthy compared to having a human influencer endorsed. Since the goal is to assess group differences and there are two independent samples for this hypothesis (the respondents exposed to a human influencer and those who are exposed to a virtual influencer), a Mann-Whitney U test is conducted which is a non-parametric rank correlation test which can be applied to ordinal data (Fitzgerald, Dimitrov & Rumrill, 2001).

The results of the Mann-Whitney U test give a P-value of 0.730 at a significance level of 0.05. A mean value of 3.633 came from this test. When the P-value is lower than the value of the significance level, the null hypothesis can be rejected. In this case however, the P-value is higher than the significance level. Therefore, there is not enough evidence to support this claim and the first hypothesis, *H1: the endorsement of a virtual influencer will make a conservation message be perceived differently in terms of trustworthiness compared to having a human influencer endorsed,* is rejected. This proves that there is no difference between a human influencer or a virtual influencer in terms of the trustworthiness of the conservation message they share with the public. Figure 12 shows the results derived from this test.

Hypothesis Test Summary

	Null Hypothesis	Test	Sig.[a,b]	Decision
1	The distribution of Trustworthiness is the same across categories of Treatment influencers.	Independent-Samples Mann-Whitney U Test	,730	Retain the null hypothesis.

a. The significance level is ,050.

Figure 13: SPSS results of first hypothesis test

The second hypothesis, being "*H2: a conservation message is perceived as more authentic when it comes from a virtual influencer created for conservation compared to when it comes from an endorsed human influencer.*" is also tested for significance with the Mann-Whitney U test in SPSS. For this hypothesis, the distribution of authenticity for the human influencer and the virtual influencer is tested.

A P-value of 0.112 came from this test, with a significance level of 0.05 and a mean of 3.233. This means that there is not enough evidence to support this hypothesis as the P-value is higher than 0.05, and there is no significant difference in the perceived authenticity between a human influencer and a virtual influencer endorsed for conservation marketing. H2 is therefore also rejected. The results from this test can be found in figure 13.

Hypothesis Test Summary

	Null Hypothesis	Test	Sig.[a,b]	Decision
1	The distribution of perception is the same across categories of Treatment influencers.	Independent-Samples Mann-Whitney U Test	,112	Retain the null hypothesis.

a. The significance level is ,050.

Figure 14: SPSS results of second hypothesis test

The third hypothesis states: *H3: the use of a human(a)/virtual(b) influencer for conservation marketing increases the public's intention to donate towards conservation more than having no influencer endorsed.* For this hypothesis, a test of >2 independent groups (the virtual influencer, human influencer and text-only surveys) are measured to find differences between the groups. Therefore, a Kruskal-Wallis H test is performed, which is the non-parametric alternative for a one-way ANOVA (Fitzgerald et al. 2001).

In this Kruskal-Wallis H test, the dependent variable is the intention of the public to donate to conservation and the independent variable is the influence that they experienced which included three groups; the virtual influencer, the human influencer or the written text (Leard Statistics, n.d.).

Figure 14 shows the output results of the test conducted in SPSS. The P-value derived from the test is 0.846 with a significance level of 0.05. This means that there is not enough evidence to support the hypothesis and therefore both H3a and H3b are rejected. This proves that there is no significant difference in the intention to donate to conservation after having the treatment of either the virtual influencer, the human influencer or the text.

Hypothesis Test Summary

	Null Hypothesis	Test	Sig.[a,b]	Decision
1	The distribution of Based on the message shown in this survey, please answer the following statement on a scale from 1 to 7, with 1 being very unlikely and 7 being very likely - How likely are you to start donating to a conservation programme? is the same across categories of TreatmentGroups.	Independent-Samples Kruskal-Wallis Test	,846	Retain the null hypothesis.

a. The significance level is ,050.

b. Asymptotic significance is displayed.

Pairwise Comparisons of TreatmentGroups

Sample 1-Sample 2	Test Statistic	Std. Error	Std. Test Statistic	Sig.	Adj. Sig.[a]
Human influencer-Virtual influencer	1,707	7,801	,219	,827	1,000
Human influencer-Text only	4,437	7,757	,572	,567	1,000
Virtual influencer-Text only	-2,730	7,661	-,356	,722	1,000

Each row tests the null hypothesis that the Sample 1 and Sample 2 distributions are the same. Asymptotic significances (2-sided tests) are displayed. The significance level is ,050.

a. Significance values have been adjusted by the Bonferroni correction for multiple tests.

Figure 15: SPSS results of the third hypothesis test

As can be seen in table 6, almost 50% of respondents who do not donate to conservation indicated to not be financially able to do so. Hypothesis 4 focusses on other ways the public can support conservations, such as reducing plastic waste, which was also mentioned in the text shown in all three survey types. Hypothesis 4 states the following: *H4: the public's intention to support conservation is different when a virtual influencer is created compared to when a human influencer is endorsed.*

Since this hypothesis tests for differences between two independent groups, a Mann-Whitney U test is conducted. The data derived from the question "this message makes me want to change my behaviour towards conservation" is taken from the group of respondents who got the virtual influencer and those who got the human influencer and are compared trough the U test. The results can be found in figure 15. The test measured a P-value of 0.697 with a significance level of 0.05, meaning there is not enough evidence to support the hypothesis and H4 is rejected. It can be concluded that there is no significant difference between the virtual influencer and the human influencer in terms of behavioural change of the public towards conservation.

Hypothesis Test Summary

	Null Hypothesis	Test	Sig.[a,b]	Decision
1	The distribution of Trustworthy/authentic - This message makes me want to change my behaviour towards conservation is the same across categories of Treatment influencers.	Independent-Samples Mann-Whitney U Test	,697	Retain the null hypothesis.

a. The significance level is ,050.

b. Asymptotic significance is displayed.

Figure 16: SPSS results of the fourth hypothesis test

After testing for behavioural change of the public, the next test aims at finding out whether the public will copy the behaviour of the (virtual) influencer. Based on the assumption that the public may not do as they are told (as was tested in H4), but rather copy behaviour they see from people they look up to (Brown and Bocarnea, 2006), the final hypothesis states "*H5: the public is more eager to copy behaviour for conservation purposes when there is a human(a)/virtual(b) influencer endorsed compared to when no influencer is endorsed*".

In this test, there are again three independent groups tested to measure potential differences. The Kruskal-Wallis H test is conducted on the factor 'intention to copy behaviour' and the three treatment groups (being exposure to human influencer, virtual influencer or only text). The results can be found in figure 16. The test measured a P-value of 0.540 at a significance level 0.05 which means that the final hypotheses (both H5a and H5b) are also rejected. There is no significant difference in the intention to copy behaviour between the human influencer, the virtual influencer and the writer of the text.

Hypothesis Test Summary

	Null Hypothesis	Test	Sig.[a,b]	Decision
1	The distribution of IntentionToCopy is the same across categories of TreatmentGroups.	Independent-Samples Kruskal-Wallis Test	,540	Retain the null hypothesis.

a. The significance level is ,050.

b. Asymptotic significance is displayed.

Pairwise Comparisons of TreatmentGroups

Sample 1-Sample 2	Test Statistic	Std. Error	Std. Test Statistic	Sig.	Adj. Sig.[a]
Human influencer-Text only	4,108	7,940	,517	,605	1,000
Human influencer-Virtual influencer	8,852	7,986	1,108	,268	,803
Text only-Virtual influencer	4,743	7,842	,605	,545	1,000

Each row tests the null hypothesis that the Sample 1 and Sample 2 distributions are the same. Asymptotic significances (2-sided tests) are displayed. The significance level is ,050.

a. Significance values have been adjusted by the Bonferroni correction for multiple tests.

Figure 17: SPSS results of the fifth hypothesis test

7. Conclusion

This study was conducted in the form of a survey experiment, where three different survey types were sent out with the aim to find differences in the outcome between the three types. For the surveys, two fake Instagram accounts were created and a text was written by AI. One Instagram account was from a virtual influencer, a red panda called Rusty, and one was of a human influencer named Aileen.

Three research questions were set up, and each of them was accompanied by one or more hypotheses. The first research question aimed to find out if the endorsement of a virtual influencer makes a difference in the way a conservation message is perceived by the public compared to when a human influencer is endorsed to bring this message. This question focussed on the trustworthiness of the (virtual) influencer, and the perceived level of expertise they have about the subject they talk about. The hypotheses that were linked to this research question are: 'H1: the endorsement of a virtual influencer will make a conservation message be perceived differently in terms of trustworthiness compared to having a human influencer endorsed.' and 'H2: a conservation message is perceived as more authentic when it comes from a virtual influencer created for conservation compared to when it comes from an endorsed human influencer.' All hypotheses have been measured through non-parametric tests, as the data was not normally distributed. Since the first two hypotheses focused on two independent groups (being the respondents who got the survey with the human influencer and those who got the survey with the virtual influencer), a Mann-Whitney U test was conducted. The results of this test found that there was not enough evidence to support either H1 or H2, and they were both rejected. This means that there was no significant difference in the perceived trustworthiness between the human influencer and the virtual influencer, and there was no significant difference in the perceived level of expertise between the human influencer and the virtual influencer. Based on this, the following answer can be concluded for the first research question: the endorsement of a virtual influencer makes no difference compared to the endorsement of a human influencer in the way a conservation message is perceived by the public.

In the second research question, it was studied whether the endorsement of a human or a virtual influencer for conservation marketing will increase the public's support towards conservation. This was studied through the following hypotheses: 'H3: the use of a human(a)/virtual(b) influencer for conservation marketing increases the public's intention to donate towards conservation more than having no influencer endorsed.' and 'H4: the public's intention to support conservation is different when a virtual influencer is created compared to when a human influencer is endorsed.'. For H3, the Kruskal-Wallis H test was conducted as this is a non-parametric test that can measure significant differences between three independent groups. In H4, two independent groups are compared and thus a Mann-Whitney U test was conducted. Both tests for H3 (a and b) and H4 found no significant differences between the treatment groups, and both hypotheses are rejected. Not only does the endorsement of an influencer (either human or virtual) not make a difference in the public's intention to donate to conservation, the endorsement of any influencer type also does not make a difference in the intention of the public to support conservation in any way.

For the final research question, it is investigated whether the public is more eager to copy behaviour based on the specific influencer type they were exposed to. For this question, not only the human influencer and virtual influencer will be tested, but the text-only survey is included here as well. This will show whether endorsing one of the influencer types makes a difference compared to having no influencer endorsed. The hypothesis that is linked to this research question states: H5: the public is more eager to copy behaviour for conservation purposes when there is a human(a)/virtual(b) influencer endorsed compared to when no influencer is endorsed. Since this hypothesis aimed to test for significant differences between three independent groups, the Kruskal-Wallis h test was conducted. The results of this test showed that there was no significant difference between the three treatment groups, resulting in both H5a and H5b being rejected. Not only is there no significant difference between human influencer – text only and virtual influencer – text only, there was also no significant difference between the human influencer and the virtual influencer in terms of intention to copy their behaviour. This allows the conclusion to be drawn that endorsing an influencer (either human or virtual) makes no difference in the intention for the public to copy behaviour for conservation purposes, and thus the public does not have a significant preferred influencer type to copy.

Since prior research about virtual influencers created for conservation marketing does not yet exist (at the time of writing this thesis), the results of this study cannot be directly compared to other studies. However, the subject of virtual influencers and human influencer has been studied in another context. A study by Böhndel et al. (2022) did also not find any significant differences between a human influencer and a virtual influencer except for the perception of likeability where the human influencer was perceived as more positive. Additionally, a study by Moustakas et al. (2020) found that an engaging storyline is an important factor in order for the public to build a relationship with a persona. This can add to the results of this study, as the storyline of the three survey types was the same. It should however be highlighted that both these prior studies were based on the marketing of a product, and did not talk about conservation marketing.

8. Managerial implications

In this chapter, suggestions are made for conservation organizations who consider endorsing an influencer (either human or virtual) for their marketing strategy with the goal to improve the engagement rates of the public. Even though the hypotheses in this study have all been rejected, it should be kept in mind that the means of all factors (intention to copy, shared values, level of trustworthiness and perception of expertise) had a value higher than 2.5 for all survey types. This means that both the human influencer, virtual influencer and the text only are generally perceived as positive over all four factors. There are no significant differences between the three options, but they are all options that give a positive outcome.

With this in mind, conservation organizations who consider endorsing an influencer for their marketing strategy should look at what influencer type fits best with the image of their company. They should keep in mind the advantages and disadvantages of both influencer types. On the one hand, creating an animal-like virtual influencer gives many options for the organization. They can raise awareness for the non-charismatic species by creating a virtual influencer which represents one of those species (following the example of On the Edge Conservation), or they can create a virtual influencer based on a flagship species which can help to generate widespread support from the public (Jarić et al., 2023). However, it does not necessarily need to be an animal-like virtual influencer, the organization can also create a human-like virtual influencer to educate and engage the public. No matter the design of the chosen virtual influencer, the organization should keep in mind some important aspects that influence how the public feels and acts towards the virtual character. The Uncanny Valley effect (Mori, 1970) is one of the most important aspects to keep in mind during the creation of the character.

The creation of a virtual influencer gives the organization the freedom to use the character in any possible situation. There are no limits to what the character can do and where in the world they can be (Wibawa et al.,2022). This allows for a great number of opportunities in terms of conservation marketing, as it gives the possibility for the virtual character to visit endangered species or habitats that need the public's support. Another option is for the virtual influencer to visit events about conservation or biodiversity, as there are no travel costs for the character.

On the other hand, endorsing a human influencer comes with the benefits of the image and amount of followers that this person has built already. When creating a virtual influencer, the organization is forced to build a persona from the beginning. Even though this can be a benefit (considering that this persona can be created to the wishes and image of the organisation), it does come with the drawback that the social media followers still need to be gained and convinced about the persona. A human influencer already has a large amount of followers, who often have build a relationship with that influencer already (Olmedo et al., 2020).

The endorsement of a human influencer comes with a monetary cost (Olmedo et al., 2020), but the virtual influencer comes with the risk of being perceived unauthentic (Lou et al., 2022) or creepy (Schwind et al., 2018).

Both the endorsement of human influencers and the creation of virtual influencers comes with its challenges, benefits and drawbacks. Since this study has shown that the type of influencer makes no difference in how the conservation message is accepted by the public and the intention to support conservation also does not differ between influencer types, the organization can choose which type they want to endorse based on personal preferences and a weighted calculation of the benefits and drawbacks that come with it. Having a good storyline as well as the influencer having expertise on the subject are important factors that should be kept in mind in this this decision (Moustakas et al., 2020; Schouten et al., 2020), but it leaves the organisations with a lot of freedom to choose which influencer type fits best with their image.

9. Limitations and future research

The conducted research is not without limitations. For starters, the influencers used in the survey are not real people. The accounts are not real, and were created for the sole purpose of conducting the study. This might have an effect on the trustworthiness and the way the respondents feel towards the influencers, as people that are known to the respondents might be more easy to trust. Future research can collaborate with real people or influencers to see if the results differ when people might already be familiar with the accounts they are questioned about. Another option in the future is to conduct a longitudinal study to make the respondents more familiar with the influencers. The same goes for the text-only survey. This survey does mention that the text was derived from a conservation organization, but does not specifically mention which one due to privacy of the organisation and time limitations. Linking the text to a well-known organisation may have an effect on the results.

The different influencers used in the study were not only artificially created, but also very specific. Virtual influencers are trending partly because they are limitless in what they can do and where they can go. In this study, only one virtual influencer was used in the shape of a red panda. Since there was only one human influencer as well, this study cannot draw a conclusion about the effectiveness of different influencer types for conservation marketing for the entire population. A different (virtual) influencer or a different text can give very different results than those measured in this study. Future research could dig deeper into other forms of virtual influencers or what the effects can be when another human influencer (another gender, age, lifestyle,…) is endorsed for conservation.

In this study, the virtual influencer was based on the flagship species of a red panda. An interesting approach for future research could be to find differences in using a flagship species compared to one of the non-charismatic species and see if either one of them would result in differences in the public's reaction. Other approaches that can be an interesting research approach is the endorsement of a human-like virtual influencer for conservation, and test for differences with an animal-like virtual influencer.

Since the surveys were sent out trough social media and were shared by many people on all used platforms (Instagram, Facebook, LinkedIn and WhatsApp), there was no control over the geographical area the respondents were located in. Even though the focus was Belgium, there is no guarantee that all respondents actually lived in Belgium at the time of data collection.

The respondents have been gathered through a combination of convenience sampling and snowball sampling. By implementing these approaches, there was no control over the participants in the study. Future research could use a different sampling method to target people who are already actively involved with social media and who feel like they have some sort of relationship with social media influencers. This might give a different result on the intention to copy the influencer.

From the introductory questions it was found that only four out of 94 respondents who follow (an) influencer(s) on social media follow a virtual influencer. It is unclear whether this number is low due to the popularity of virtual influencers within the sample size (which is assumed to be mostly Belgium-based) or if the respondents are not yet familiar with this type of influencers. Future research could focus on the extent to which virtual influencers are known and popular in Belgium specifically.

Finally, a limitation worth mentioning is a personal bias in the knowledge about conservation programmes as well as the use of social media. A few of the respondents indicated to not be aware what a conservation programme is. Based on this, it is advised to future research to first explain the concept of conservation programmes and conservation organisations in order to prevent this type of limitation.

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Please read the following questions carefully and answer as candidly as you can, placing the number of your choice in the blank to the left of each question.

****

Based on a 1–5 scale, please indicate whether you agree or disagree with the next statements, where:

1) Strongly disagree   2) Disagree   3) Neutral   4) Agree   5) Strongly agree

1. [celebrity or persona] and I share many of the same values.
2. What is important to [celebrity or persona] is important to me.
3. I try to model the behavior of [celebrity or persona]
4. I try to do the things I believe [celebrity or persona] would do.
5. [celebrity or persona] has shown me the best way to live my life.
6. I care about the same things [celebrity or persona] cares about.
7. I look to [celebrity or persona] as a role model.
8. I support those who support [celebrity or persona]
9. I would like to be more like [celebrity or persona].
10. [celebrity or persona] has set an example for me of how to think and act.
11. I want to learn from [celebrity or persona] as much as I can.
12. I believe many of the same things [celebrity or persona] believes.
13. I feel that I am in unity with [celebrity or persona].
14. I have often thought about what it would be like to be [celebrity or persona].
15. I aspire to become the kind of person [celebrity or persona] is.
16. The qualities I see in [celebrity or persona] are the same qualities I seek to develop in my own life.
17. Watching [celebrity or persona] has helped me to make decisions in my own life.
18. I advocate the same things that [celebrity or persona] advocates.
19. The things that make [celebrity or persona] upset make me upset.
20. I sometimes imitate [celebrity or persona].

What is your age?

What is your gender?

○ Male

○ Female

○ Non-binary / third gender

○ Prefer not to say

→

Which of the following social media channels do you use on a daily basis?

☐ Instagram

☐ Facebook

☐ Twitter

☐ YouTube

☐ TikTok

☐ LinkedIn

☐ Snapchat

☐ Other

What are the reasons for you to spend time on social media?

- [ ] Entertainment
- [ ] Education
- [ ] To stay in touch with friends and family
- [ ] To pass time
- [ ] To know about the latest news
- [ ] To share my opinion with others
- [ ] To know about trending topics
- [ ] To make new friends
- [ ] Other

[   ]

How many hours a day do you spent on social media? (on average)

- ( ) Less than 1
- ( ) 1-3
- ( ) 4-5
- ( ) 6-8
- ( ) 8+

Do you follow any influencers on social media?

- ( ) Yes
- ( ) No

The following two questions were only displayed to the respondents who answered "yes" to the question "do you follow any influencers on social media?".

What social media platform do you use to follow these influencers?

☐ Instagram

☐ Facebook

☐ Twitter

☐ Youtube

☐ TikTok

☐ LinkedIn

☐ Snapchat

☐ Other

What kind of influencer(s) do you follow?

- ☐ Fashion influencer
- ☐ Lifestyle influencer
- ☐ Food influencer
- ☐ Sports influencer
- ☐ Sustainability influencer
- ☐ Veggie/vegan influencer
- ☐ Beauty influencer
- ☐ Travel influencer
- ☐ Virtual influencer
- ☐ Gaming influencer
- ☐ Celebrity influencer
- ☐ Pet influencer
- ☐ Other

→

Do you donate to a conservation programme?

○ No

○ Yes

→

When the indicated answer is "no", the following question is displayed:

What is/are the reason(s) not to donate to a conservation programme?

☐ I am not aware of the need for donations towards conservation

☐ I am not able to financially support conservation

☐ I have no interest in the conservation of animal species

☐ I do not trust the organisations to use my donations correctly

☐ Other

When the indicated answer was "yes", the following question is displayed:

What are the reasons for you to donate to a conservation programme?

☐ I believe it is my responsibility to do so

☐ I worry about the effects on biodiversity when certain animal species go extinct

☐ My friends/family do it too

☐ It is in line with my moral values

☐ For the future generations to be able to enjoy biodiversity

☐ Other

[ ]

→

After these questions, the respondents were shown either the virtual influencer (as can be seen in figure 8) + Instagram post, the human influencer (as can be seen in figure 9) + Instagram post or only the text with the explanation that this text was derived from blog on the website from a conservation organization. The text in the Instagram posts of the Influencers is the same as the text displayed in the text-only survey.

The following questions are related to the treatment the respondents have received and are the same for each survey type.

In the following questions, "this person" refers to the writer of the previously seen text.

On a scale of 1 to 5, with 1 being completely disagree and 5 being completely agree, please rate the following statements based on the previously shown text:

	1: Strongly disagree	2: Disagree	3: Neither agree nor disagree	4: Agree	5: Strongly agree
I feel like this person and I share the same values	○	○	○	○	○
What is important to this person is important to me	○	○	○	○	○
I try to do the things I believe this person would do	○	○	○	○	○
This person has shown me the best way to live my life	○	○	○	○	○
I care about the same things this person cares about	○	○	○	○	○
I look to this person as a role model	○	○	○	○	○
I support those who support this person	○	○	○	○	○
I would like to be more like this person	○	○	○	○	○
This person has set an example for me of how to think and act	○	○	○	○	○
I want to learn from this person as much as I can	○	○	○	○	○
I believe many of the same things this person believes	○	○	○	○	○
I feel like I am in unity with this person	○	○	○	○	○
I aspire to become the kind of person the writer of the text is	○	○	○	○	○

The qualities I see in this person are the same qualities I seek to develop in my own life	○	○	○	○	○
I advocate the same things this person advocates	○	○	○	○	○
The things that make this person upset make me upset	○	○	○	○	○

The next series of questions are only shown to the respondents who received the survey with the human influencer or the virtual influencer:

In the following questions, "this person" refers to the writer of the previously seen text.
On a scale of 1 to 5, with 1 being completely disagree and 5 being completely agree, please rate the following statements based on the previously seen Instagram account and post:

	1: Strongly disagree	2: Disagree	3: Neither agree nor disagree	4: Agree	5: Strongly agree
I believe this person to be honest	○	○	○	○	○
I believe this person to be reliable	○	○	○	○	○
I believe this person to be sincere	○	○	○	○	○
I believe this person to be trustworthy	○	○	○	○	○
I believe this person to be an expert on the topic	○	○	○	○	○
I believe this person to be experienced in this topic	○	○	○	○	○
I believe this person to be knowledgeable on this topic	○	○	○	○	○

I believe this person to be qualified for this topic	○	○	○	○	○
I believe this person to be skilled for this topic	○	○	○	○	○
I believe this person is the right messenger to bring this text	○	○	○	○	○
This message makes me want to change my behaviour towards conservation	○	○	○	○	○

→

The following questions are displayed to all respondents, no matter the survey type they received:

Based on the message shown in this survey, please answer the following statement on a scale from 1 to 7, with 1 being very unlikely and 7 being very likely

	1: Very unlikely	2: Unlikely	3: Rather unlikely	4: Same as before	5: Rather likely	6: Likely	7: Very likely
How likely are you to start donating to a conservation programme?	○	○	○	○	○	○	○

→

When the respondent gave an answer ranging between 1 or 4, the following final question was displayed:

Why would your intention to donate towards conservation not change?

- [ ] I do not have the financial resources to donate to conservation

- [ ] I do not trust the writer of the text

- [ ] The text was not convincing to me

- [ ] Other:

>

→

First series of questions:

KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		,920
Bartlett's Test of Sphericity	Approx. Chi-Square	1242,298
	df	120
	Sig.	<,001

Total Variance Explained

Component	Initial Eigenvalues Total	Initial Eigenvalues % of Variance	Initial Eigenvalues Cumulative %	Extraction Sums of Squared Loadings Total	Extraction Sums of Squared Loadings % of Variance	Extraction Sums of Squared Loadings Cumulative %	Rotation Sums of Squared Loadings[a] Total
1	8,054	50,340	50,340	8,054	50,340	50,340	6,757
2	1,812	11,325	61,664	1,812	11,325	61,664	6,623
3	,940	5,873	67,537				
4	,740	4,622	72,160				
5	,709	4,432	76,592				
6	,527	3,291	79,883				
7	,522	3,259	83,143				
8	,458	2,861	86,004				
9	,405	2,530	88,534				
10	,344	2,149	90,682				
11	,318	1,985	92,667				
12	,282	1,762	94,429				
13	,269	1,680	96,109				
14	,242	1,515	97,624				
15	,204	1,274	98,898				
16	,176	1,102	100,000				

Extraction Method: Principal Component Analysis.

a. When components are correlated, sums of squared loadings cannot be added to obtain a total variance.

	Component matrix 1	Component matrix 2	Pattern matrix 1	Pattern matrix 2	Structure matrix 1	Structure matrix 2
I feel like this person and I share the same values	.748		.794		.820	.494
What is important to this person is important to me	.733	-.452	.905		.858	.427
I try to do the things I believe this person would do	.694		.477		.650	.575
This person has shown me the best way to live my life	.688			.731	.464	.761
I care about the same things this person cares about	.739	-.414	.868		.847	.451
I look to this person as a role model	.714	.466		.890	.414	.841

I support those who support this person	.545				.502	.461
I would like to be more like this person	.656			.760	.415	.753
This person has set an example for me of how to thinks and act	.658	.466		.865		.800
I want to learn from this person as much as I can	.768			.641	.592	.771
I believe many of the same things this person believes	.752		.812		.831	.491
I feel like I am in unity with this person	.767		.430	.437	.676	.679
I aspire to become the kind of person the writer of the text is	.704	.401		.821	.444	.811
The qualities I see in this person are the same qualities I seek to develop in my own life	.819			.670	.637	.816
I advocate the same things this person advocates	.744	-.401	.857		.845	.461
The things that make this person upset make me upset	.580		.685		.666	

Second series of questions:

KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		,913
Bartlett's Test of Sphericity	Approx. Chi-Square	825,753
	df	55
	Sig.	<,001

Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings[a]
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total
1	7,187	65,334	65,334	7,187	65,334	65,334	6,266
2	1,179	10,715	76,049	1,179	10,715	76,049	6,117
3	,747	6,794	82,843				
4	,460	4,185	87,028				
5	,350	3,185	90,213				
6	,292	2,652	92,864				
7	,216	1,961	94,826				
8	,184	1,670	96,496				
9	,157	1,428	97,924				
10	,132	1,200	99,124				
11	,096	,876	100,000				

Extraction Method: Principal Component Analysis.

a. When components are correlated, sums of squared loadings cannot be added to obtain a total variance.

	Component matrix		Pattern matrix		Structure matrix	
	1	2	1	2	1	2
I believe this person to be honest	.799	.463		.964	.554	.920
I believe this person to be reliable	.863			.904	.652	.935
I believe this person to be sincere	.793			.841	.596	.863
I believe this person to be trustworthy	.849			.841	.657	.904
I believe this person to be an expert on the topic	.801		.871		.870	.582
I believe this person to be experienced in this topic	.827		.871		.890	.610
I believe this person to be knowledgeable on this topic	.847		.616		.823	.721
I believe this person to be qualified for this topic	.808	-.479	1.043		.931	.530
I believe this person to be skilled for this topic	.868		.839		.910	.667
I believe this person is the right messenger to bring this text	.801		.595		.782	.678

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
,876	,878	4