

The Effect of Normative Influence on Online Comment Sections

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**Declaration**

This Thesis is entirely my own work, and has not been previously submitted to this or any other third level institution.

Signature:

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**Abstract**

In recent years there has been increasing concern about Internet discussion being manipulated by political actors to further their agenda. The current research assessed if the use of the technique of astroturfing is effective at changing peoples attitudes by studying the role of normative influence in online commenting behaviour. Results found no support for the hypothesis, that descriptive norms, as operationalised by the type of comment in the majority in a comment section, could influence people to leave comments more supportive of the majority. The results suggest that astroturfing is not an effective tool in changing attitudes when group identity is not salient.

### **The Effect of Normative Influence on Online Comment Sections**

Online comment sections are widespread across the Internet, appearing in forums, social media and news websites. They are a rich source of discussion of political topics and allow for political engagement by anyone with an internet connection (Gil de Zúñiga, Pugi-i-Abril & Rojas, 2009). However, in the wake of the 2016 presidential election in America and the Brexit referendum in the UK, there have been media reports that political comment sections are being used by state actors and others to push political agendas (Booth Weaver, Hern, & Walker, 2017; Sharkov, 2017).

One of the techniques being employed is the use of astroturfing to shape public debate (Woolley, 2016). Astroturfing, in an online context, refers to coordinated campaigns that aim to influence opinion by leaving comments or other indicators of support, for their agenda (Zhang, Carpenter & Ko, 2013). This is done to make it seem like a position or opinion has majority support, so that normative influence occurs, where people are influenced to conform to behaviours based on what they see the majority doing (Kaplan & Miller, 1967). As studies have found astroturfing is being carried out both by humans (Keller, Schooch, Stier & Yang, 2017) and by artificial intelligence (A.I.) chatbot networks (Hegelich & Jantezko, 2016), it is possible that, with the advent of more advanced A.I. and other technologies, this issue may escalate. Thus, it is important that the effect of normative influence on online commenting behaviour is studied to assess how effective astroturfing is at shaping attitudes or opinions.

### **Comment Sections and Social Identity**

Internet comments sections are subject to all sorts of social forces that influence how, or if people comment (Ellison, Steinfield & Lampe, 2007; Ma & Agarwal, 2007; Santana, 2014). There are many online communities that consist of likeminded individuals, but in open online environments like social media, where people with different opinions meet, debate can often become polarised, especially in regard to politics

(Conover et al., 2011). Debate on the internet can be constrained or shaped by group identities, as people become more hardline in their own beliefs through discourse with other people (Karlsen, Steen-Johnsen, Wollebæk & Enjolras, 2017). Research has found that group identity becomes stronger when people with the same opinions converse with each other, and also that conversation between individuals with differing opinions leads to reinforcement of the respective sides affiliations to in-groups or out-groups (Yardi & Boyd, 2010). This would suggest that even without manipulation techniques, such as astroturfing, peoples' values and beliefs can change, due to the social influence that occurs naturally through internet communication. These findings highlight the importance of group identity in online communication which can be further understood through the social identity perspective (Tajfel & Turner, 1979).

The social identity perspective (Tajfel & Turner, 1979) states that apart from an individual's own identity an individual also has multiple social identities. These social identities are formed when an individual feels an affinity towards a group they belong (Stets & Burke, 2000). Different social identities become salient depending on the context; a person at a football match will take on the social identity of the team they support, whilst if they were at church a more religious social identity would be made salient. These groups have their own norms that they use to guide an individual's own behaviours when their social identities are made salient. Norms are behaviours and beliefs held and performed by the majority of a group that act as guiding rules on how to behave (Kaplan & Miller, 1987) The norms for football supporters would be to act passionately and vocally while norms for the church-goers would be to act quietly and respectfully. A central part of this perspective is the dynamics between in-groups and out-groups; people tend to favour in-group members over out-group members. An example of this can be seen in a study conducted by Levine, Prosser, Evans and Reicher (2005). They found that football

fans were less likely to help a confederate who staged a fall if they wore a rival team's jersey than if they wore the jersey belonging to the team they supported.

On the internet, visual cues associated with social identities, such as sports jerseys, are often not obvious and so Reicher, Spears and Postmes (1995) proposed the social identity model of deindividuation effects (SIDE) to extend the social identity perspective to communication on the Internet. The SIDE model posits that in an online context, where visual cues are absent, depersonalisation occurs meaning an individual redefines their self-identity in relation to the norms expressed by the group. For example, someone who identifies as politically right or left wing, would take on the associated attitudes and beliefs of their respective political identity, as they begin to perceive themselves in terms of the norms of that group (Postmes, Spears and Lea, 1998). The SIDE model also argues that individuals consolidate their identity with a group by performing these attitudes and beliefs and by distancing themselves from out-groups (Klein, Reicher & Postmes, 2007) which in a comment section can result in flaming (Moor, Heuvelman & Verleur, 2010). This explains why online communication can become so polarised, as found by Yardi and Boyd (2010), as people are constantly reinforcing their own social identities by acting consistently to group norms and flaming those in perceived out-groups. An example of this occurring in a natural setting can be seen in research by Bäck, Bäck, Sendén & Sikström (2018), they studied language use in a xenophobic forum and found that over time as users they changed from using the word 'I' to using 'we', as well as increasingly using the word 'they' in reference to outgroups. Interestingly, the style of comments made by new users began to change to the general style in use in the forum. This supports previous research on the SIDE model by Postmes, Spears and Lea (2000) that suggested that participants in online communication begin to conform in how they communicate to the group norm, as group identity emerges through the construction of norms through form and content of messages. It also provides an



example of the role normative influence can have in online communication, as peoples' behaviour was found to be influenced by norms. This is the type of social influence that underlies astroturfing (Zhang et al., 2013). The model shows that conforming to group norms occurs online and the significant effect it can have on behaviour but further understanding of the normative influence literature is needed to understand how astroturfing could affect these norms.

### **Normative Influence**

Normative influence is a type of social influence that refers to the effect social norms have on behaviour, people are influenced to act in concordance with group norms. The Focus theory of normative conduct proposed by Cialdini, Reno and Kallgren (1990) states that norms, and the type of norms, when made salient to an individual play a significant role in influencing behaviour. This especially occurs when an individual is met with a situation in which they are unsure of how to act, as in these ambiguous situations, people look to social norms to assess the correct behaviour (Sherif, 1935). Central to this theory is the difference between both descriptive and injunctive norms, which interplay to influence behaviour depending on the norm in focus (Cialdini et al., 1990). Descriptive norms constitute what the majority are seen to be doing while injunctive norms are what others should be doing. A clear example of these norms is described in research by Cialdini, Reno and Kallgren (1991) who studied the influence descriptive and injunctive norms have in natural, ambiguous settings by measuring littering behaviour in a park. They found that when a park environment was heavily littered participants were more likely to litter themselves, as the descriptive norm for the situation was that the majority of people litter in that environment. In another condition, the participants were exposed to a confederate dropping a single piece of litter in an environment free of litter. They were found to be even less likely to litter than when the park was completely litter-free, as the act of watching an individual litter into a clean environment made the injunctive norm

salient by highlighting the abnormality of the behaviour. The results of this study suggest that descriptive and injunctive norms when made salient can be used to influence behaviour.

Other research since has supported the use of descriptive norms to influence behaviour in different contexts, such as towel reuse (Goldstein, Cialdini & Griskevicius 2008; Schultz, Khazian & Zeleski, 2008), energy conservation (Ayres, Raseman & Shih, 2012; Nolan, Schultz, Cialdini, Goldstein & Griskevicius, 2008; Smith et al., 2012) and health behaviour (Reid, Cialdini & Aiken, 2010). It has also made clear the importance of injunctive norms in reducing a boomerang effect that can occur when people reduce the desired behaviour to be inline with majority behaviour. This is counteracted by providing an indicator that the behaviour is approved of (an injunctive norm) and so people exceeding the majority behaviour do not reduce it due to the descriptive norm (Schulz, Nolan, Cialdini, Goldstein & Griskevicius, 2007). It is also important to keep these norms congruent, as if they are in conflict it weakens the effect on behaviour change (Smith et al., 2012). Another substantial element is that the norm must be subscribed to (Kalgren, Reno & Cialdini, 2000), meaning that if an individual does not feel part of the group, the group norms will not be adhered to, as such normative influence will not occur. This point appears very relevant to online discourse, as according to the SIDE model online communication is significantly influenced by group norms (Klein, Reicher & Postmes, 2007).

The use of descriptive norms in online contexts has not been thoroughly studied, but it has been studied in the context of online charity appeals (Van Teunenbroek & Bekkers, 2017). Most importantly however, the effect of normative influence has been studied in online comments by Sukumaran, Vezich, McHugh and Nass (2011), which provides further understanding in how astroturfing, using descriptive norms, can influence behaviour.

**Normative Influence and online comments**

Sukumaran et al. (2011) theorised that when entering a comment section on a website or forum, the social norms could be just as unclear or ambiguous as real life situations, like the littering norms in the park. They believed an individual should look to the other comments (the descriptive norms) and the site rules (the injunctive norms) to understand the type of comment they can leave. Following this logic of online comment sections as ambiguous social spaces, Sukumaran et al., (2011) tested to see if normative influence could affect the thoughtfulness of people's comments online. Particularly if others' commenting behaviour could influence the participants' own behaviour in regard to the thoughtfulness of the comments they left. They created a website hosting several articles and found that when presented with comment sections full of thoughtful comments, participants were more likely to leave thoughtful comments of their own, while comment sections containing mostly comments of low thoughtfulness led to more low-thought comments. The results of this showed that descriptive norms could influence commenting behaviour, in that participants were influenced to match the type of comment left by the majority. This study showed that the effects of normative influence, as shown by previous research (Ayres et al., 2012; Cialdini, et al., 1990; Schulz et al, 2007; Schulz, et al., 2008; Smith et al., 2012), could be applied to influence an individual's commenting behaviour online. In doing so it also highlighted an important aspect. That simply engaging in commenting on the website was enough to elicit a minimal level of group membership. Otherwise normative influence would not have occurred, as it is necessary that participants subscribe to group norms if normative influence is to have an effect (Kalgren et al., 2000).

The aim of astroturfing is to create the sense that an opinion or attitude has widespread support, in order to influence people into supporting it (Zhang et al., 2013). In the study by Sukumaran et al. (2011) descriptive norms were shown to influence

commenting behaviour in the type of comments people left. The results suggest that astroturfing could be used to influence people into leaving comments, but not whether an attitude expressed in comment can be influence, or if attitude change can be elicited.

### **Normative influence and attitude change**

Classic conformity research (Asch, 1959; Sherif, 1935) describes conformity that occurs on a public level and conformity on a private level. In Asch's (1959) study participants conformed to majority opinion of which line was longer, however, this does not necessarily mean they believed that the line was longer internally, just that their outward behaviour had changed. According to Sherif (1935) the process by which private beliefs are changed by normative influence is known as internalisation. If astroturfing is effective at changing public opinion through normative influence, then it would require individuals to internalise attitudes expressed by the majority. There is no direct research that shows that descriptive and injunctive norms can lead to internalised attitudes in online contexts, but there is support for it in the social identity and social norm literature in offline contexts.

It has been suggested that internalisation occurs when individuals adopt and perform the group norms associated with a salient social identity (Hogg & Reid, 2006). If attitudes and behaviours change on a private level as well as on a public level then it is a sign that internalisation of the norms occurred. The findings of a study by Smith and Louis (2008) support this suggestion. The study found that students attitudes towards college related issues could be changed through the use of descriptive and injunctive norms, this had a greater effect when the norms belonged to a perceived in-group. Internalisation also appears to have occurred in studies by Nolan et al. (2008) and Ayers et al. (2012), where individuals' were influenced normatively to reduce their usage of household energy despite not being aware of being observed. As such, the knowledge of an in-groups majority usage influenced their private attitudes towards energy

conservation. This suggests that group norms, consisting of both descriptive and injunctive norms, when conformed to, result in internalisation of group attitudes, but only if an individual identifies with the group.

Therefore, when people identify with a group they are likely to internalise the attitudes expressed by group norms. As the SIDE model described earlier suggests, in online contexts depersonalisation occurs and individuals express themselves through social identities rather than their own identity. According to Postmes, Haslam and Swaab (2005), in the absence of an available common group identity in an online environment, participants look to the descriptive and the injunctive norms to deduce group identity. Participating in commenting on a website has been found to elicit group identity and descriptive norms can be used to influence peoples' commenting behaviour (Sukumaran et al., 2011). This requires people to be uncertain of the accepted behaviour, as otherwise they would not look to descriptive norms to assess the correct behaviour for that group (Cialdini et al., 1991). Thus, participants in a comment section should identify as being part of a group with others in the comment section. The focus theory of normative conduct (Cialdini et al., 1990) suggests that when they look to the majority of comments to deduce the attitudes expressed in the group norms and if they don't know about the topic discussed, they will be influenced by the descriptive and injunctive norms into commenting consistently with the norm. By engaging in norm consistent behaviour, their identity to the group will be strengthened (Klein, Reicher & Postmes, 2007) and they should internalise the attitudes expressed (Hogg & Reid, 2006). It is thus through normative social influence and social identity theory, and the SIDE model in its application to anonymous online contexts, that astroturfing could change attitudes and be used as an effective tool for persuasion.

**Current study**

The current study, thus, hopes to answer two questions. Firstly, will normative influence succeed in influencing individuals to express an attitude consistent with the descriptive and injunctive norms in a comment section? And secondly, will these attitudes be internalised by the individuals who are normatively influenced?

There are two hypotheses for the current study:

**H1:** Participants will leave a comment consistent in attitude with the attitudes expressed by the majority in a comment section.

**H2:** There will be a difference in attitude scores for those who comment consistent with majority opinion.

## **Method**

The study used an independent measures design with two experimental groups and one control group. The independent variable is normative influence, as operationalized by the type of comment majority in the comment sections. There are two dependent variables. Firstly environmental attitudes and secondly the type of comments made by the participants.

### **Participants**

Participants (N=78) were recruited for the study through email and social media outreach on a purely voluntary basis with no financial or academic incentive. 13 of these participants failed to complete the study and as such the sample included in the study consisted of 65 participants (27 male, 37 female, 1 trans.) 83% of the sample were Irish, the other 17% were non-Irish. An online tool (Random redirect tool, 2016) that randomised URL redirects was used to allocate participants randomly to either of the experimental conditions or the control. 21 were allocated to the pro-wolf condition, 23 to the anti-wolf condition and 21 to the control.

### **Materials**

#### ***Website***

For the current study, the website building tool Wix was used to create three versions of the same website (See Appendix A). The websites all shared the same content, an article from the Guardian newspaper by Barkham (2018) titled “Harmless or vicious hunter? The uneasy return of Europe's wolves” on the topic of wolf reintroduction in Europe. This article was chosen due to it being a neutral topic for an Irish sample, as it mainly described events happening in Germany and Scandinavia. Five independent judges rated the article on how pro-wolf or anti-wolf reintroduction the article was using a

Likert scale. The judges unanimously rated the article with a score of 3, meaning they believed it to be of a neutral position on the topic. This was to control for the effect an article arguing an opinion may have had on the experiment. The only differences across the conditions were the comment sections.

### **Comments**

To create realistic comment sections, comments from the original Guardian article (Barkham, 2018) were chosen to be used in the study (See Appendix B.) Using likert scales, three independent judges were asked to rate each comment on how supportive or unsupportive of wolf reintroduction they were. They also rated how thoughtful the comment was, to assess comment quality. The averages of these scores were used to rate each comment and these ratings were used to assign the comments to the experimental conditions. In the first condition, the majority of the comments were supportive of wolf reintroduction into Europe. In the second, the majority were against it. In the control there was no comments at all. Each comment section contained 20 comments to show the majority, 5 neutral comments and 5 comments that were opposite the majority. The first 9 comments in each condition were matched in parallel, with equal levels of of pro-wolf or anti-wolf sentiment and thoughtfulness. The 7th comment was neutral and the 9th comment was an opposing view. This was done so neither comment section was skewed in level of support or in the quality of the comment and to provide a more natural looking comment section. The rest were randomly allocated. The comments at the top of the experimental conditions were also set to 35 'likes', this was to indicate approval towards the comments and highlight the injunctive norms to counter any boomerang effect that may occur (Schulz et al., 2007) this also aims to keep these norms congruent as incongruence can lessen normative influence (Smith et al., 2012.)



**NEP Scale**

To measure environmental attitudes, the New Ecological Paradigm (NEP) Scale (Dunlap, Van Liere, Mertig, Jones, 2000) was used pre and post-test (See Appendix C.) The NEP scale is a 15-item scale including statements such as “Humans have the right to modify the natural environment to suit their needs” and “Plants and animals have as much right as humans to exist”, these statements are rated using a 5-point Likert scale from strongly disagree (1) to strongly agree (5). The even numbers are reversed scored, these were added to the sum of the odd numbers and an average score was used as an indicator for environmental attitude. The NEP scale has been used widely and there is evidence supporting the validity of the scale in different environmental contexts (Dunlap, Van Liere, Mertig & Jones, 2000; Hawcroft & Milfont, 2010).

**Google Forms**

Google Forms is a free survey creation tool by Google. In the study it was used to host the information, consent, demographics and debrief forms (See Appendix D) as well as the scales. It also provided the link to the web experiment.

**Pilot**

A pilot study was conducted using a small sample (N=5) to test the procedure and materials used and highlight any important issues. There were no specific issues reported with the materials used. However, there was an issue with the randomisation tool as it did not appear to have given equal value to the websites, as such the tool was readjusted so it would randomly allocate participants evenly across the three groups. Participants were asked for feedback about the topic of the article and the comments. The topic of wolf reintroduction was rated to be topic they had not previously considered and the

respective comment sections assessed to be in line with the assigned condition in being pro-wolf or anti-wolf reintroduction.

### **Procedure**

To elicit the sense of a natural online environment, the study was conducted completely online. All the forms were hosted using Google Forms and the experiment was hosted on Wix. Participants were first asked to fill in the NEP Scale. They were then requested to create a pseudonym and then follow the link to the article. The link randomly redirected the participants to one of the two experimental conditions or the control condition. On loading the website, participants were shown an instruction message that asked them to read the article and the comments and then leave one comment of their own, using the pseudonym they had created. After commenting, participants were requested to return to the Google Forms page and answer the NEP scale for a second time. Participants were also asked if they identify as an environmentalist. On finishing participants were debriefed and thanked for their participation.

### **Ethics**

The Department of Technology and Psychology Ethics Committee granted ethical approval for the current research. All participants were recruited on a voluntary basis; they were over the age of eighteen and gave their consent to participate. Every participant's information was confidential and aggregated data was reported anonymously. There was no deception or vulnerable group involved in the study. The article chosen for the study avoided any topic that could cause harm to participants. Participants were warned about the content of the article before reading it and were reminded of their right to withdraw. At the end of the study participants were provided a full debrief.

## Results

Before statistical analysis of the data, every comment made by the participants was rated by three independent judges on the level of support they showed for wolf-reintroduction (See Appendix E). The ratings were averaged and the score was used as the marker for the attitude expressed by the participants in their comments.

The study aimed to test two hypotheses, firstly were participants more likely to leave a comment consistent in attitude with the majority attitude expressed in a comment section and secondly, if they did, would their attitudes measured by the N.E.P scale be consistent with the attitude expressed.

The study required a baseline measure for environmental attitudes and so descriptive statistics were run for pre-test NEP scores. The mean scores and standard deviations were similar across the groups: Pro-wolf ( $m = 3.88$ ,  $sd = .68$ ), anti-wolf ( $m = 3.58$ ,  $sd = .60$ ) control ( $m = 3.59$ ,  $sd = .52$ ) and showed generally pro-environmental attitudes.

To begin testing the first hypothesis, descriptive statistics to view the differences between groups in their commenting behaviour were also run. The descriptive statistics shown in Table 1 show a difference in mean scores between the comment sections with the pro-wolf majority comments, the anti-wolf condition and the control group. From the table, one can see that generally participants in the pro-wolf condition made comments that were pro-wolf reintroduction, participants in the anti-wolf condition made comments that were slightly anti-wolf reintroduction and the control group was in between.

Table 1 Descriptives for type of comment

|           | N  | Mean | SD  |
|-----------|----|------|-----|
| Pro-Wolf  | 21 | 3.6  | 1.1 |
| Anti-Wolf | 23 | 2.8  | 1.1 |
| Control   | 21 | 3.2  | 1   |

To test if these differences were significant, an One-way Ancova was conducted controlling for pre-test environmental attitudes measured by the NEP scale. Preliminary checks were carried out to test if any assumptions had been violated for linearity, normality, homogeneity of variances and homogeneity of regression slopes. There was no significant difference found between the groups when controlling for environmental attitudes.  $F(2, 61) = 3.24$ ,  $p = .062$ , partial eta squared = .087. The effect of the environmental attitudes was less significant than the independent variable and accounted for less of the variance in the dependent variable.  $F(1, 61) = 1.33$ ,  $p = .278$ , partial eta squared = 0.19. As the results were non-significant the second hypothesis was not tested (See Appendix E for raw data.)

### Discussion

The study sought to understand if normative influence could be used to influence online commenting behaviour and change attitudes. The first hypothesis was not supported by the results. There was no significant differences found between the groups in the type of comments they made. These results would suggest that normative influence, operationalised by the attitude expressed by the majority comments in a comment section, does not affect how people comment online. As the first hypothesis was not supported, the second hypothesis that normative influence would engender attitude change could not be tested.

The lack of support for the first hypothesis runs contrary to the literature regarding normative influence. Prior research on descriptive and injunctive norms has supported their role in influencing behaviour in many different contexts (Ayres et al., 2012; Cialdini, et al., 1990; Cialdini et al., 1991, Schulz et al, 2007; Schulz, et al., 2008; Smith et al., 2012) and, most relevantly, in influencing online comments (Sukumaran et al., 2011). On a practical level these results would suggest that astroturfing is not an effective tool for influencing peoples attitudes. However, there are a number of theoretical explanations to why no statistically significant influence on behaviour was found.

A central part of Sukumaran et al. (2011) study was that just by participating in the comment section was enough to elicit a salient group membership. If the group identity wasn't adhered to then normative influence would not have occurred (Kalgren, Reno & Cialdini, 2000). This was an assumption that the current study was built on, that like the study by Sukumaran et al. (2011), participating in the comment section would have led to normative influence occurring. However, in the current research it is possible that participants did not identify with the local group norms. This can be explained through the social identity perspective (Tajfel & Turner, 1979). The design of the study required that a baseline measure of environmental attitudes was assessed for the groups, the NEP scale

was used for this purpose. It is possible that by completing the scale it reminded the individuals of one of their own social identities that related to environmental concern. Previous research has shown that social identities can be primed online (Postmes, Spears, Sakhel & De Groot, 2001) and guide following behaviour so it is likely that this occurred. It appears as this social identity was made salient over the group identity created by participating in the comment section and the group norms assessed by the descriptive and injunctive norms were thus not conformed to. This implies that the group membership elicited by participation in a comment section, found by Sukumaran et al. (2011), was weaker than prior social identity.

In the current study, participants were only briefly exposed to this group participation, in previous studies (Postmes, Spears & Lea, 2000) were found to conform to group norms over time, suggesting that group identity was strengthened by participation. It is possible that if participants engaged more than once or consistently with the comment sections they would come to identify with the group more and their prior social identities would be less salient. The study by Bäck, Bäck, Sendén and Sikström (2018) further supports this, as individuals shifted from using 'I' to 'we' over time, suggesting conformity to a collective identity.

There are thus two main limitations of the study. Firstly, the use of the NEP scale as an measure of attitude. The NEP scale was chosen because of its widespread use and validity (Dunlap, Van Liere, Mertig & Jones, 2000; Hawcroft & Milfont, 2010). However, as it explicitly measured attitude it could have led to priming of an environmental social identity. Secondly, participants were only asked to engage once in the comment section, assuming that this would be enough to elicit a sense of group identity. This did not appear to be the case, as either other social identities were made salient over it or group identification simply did not occur.

Therefore, there are two main suggestions for future research. Firstly, an implicit measure of attitude could be used in a similar experiment to rule out the chance of a social identity from becoming salient. Secondly, the effect of using descriptive norms should be studied in a natural online environment. Social identity and group norms have been researched in this context (Bäck, Bäck, Sendén & Sikström, 2018) but not if descriptive norms can be used through the technique of astroturfing to alter the group norms. In natural online settings, people tend to leave comments over time and become parts of communities (Schoberth, Preece & Heinzl, 2003). In these settings individuals are engaged in consistent communication and group identity can emerge through this social interaction as people increasingly conform to normative behaviour (Postmes, Spears & Lea, 2000). The SIDE model further suggests that people will act out this group identity through group norms (Klein, Reicher & Postmes, 2007) while consistently reevaluating the group norms by looking at the descriptive and injunctive norms expressed in communication (Postmes, Haslam & Swaab, 2005). If these group norms are found to be able to be changed by altering the descriptive norms over time then it could suggest that astroturfing is an effective tool for changing attitudes, as the internalisation of group norms leads to attitude change (Hogg & Reid, 2006).

### **Conclusion**

In conclusion, normative influence, operationalised by the attitude expressed by majority in a comment, was not found to influence people to conform to the majority attitude expressed. This would suggest that astroturfing is not an effective tool for influencing attitudes. However, this runs against a wealth of previous research showing that normative influence can engender behaviour change and lead to internalised attitudes. As such, the current research lends support to the suggestion in the focus theory of normative conduct that groups need to be identified with for normative influence to occur (Kalgren et al., 2000).

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Appendix A

*URL links to the three websites*

Control - <https://n00162898.wixsite.com/con0>

Pro-Wolf - <https://n00162898.wixsite.com/1ccc>

Anti-Wolf - <https://n00162898.wixsite.com/2ccc>

Appendix B

Comment sections

| Condition 1 - Pro-Wolf reintroduction comments   | Condition 2 - Anti-wolf reintroduction comments  |
|--|--|
| <p>1<br/>Spli34</p> <p>Harmless or vicious hunter?<br/>Mostly harmless. Great predator for keeping deer numbers in check especially given that there are too many deer in the UK that are helping spread parasites that are life threatening to humans. Bring back Wolves ASAP.</p> <p>Its time the people who love watching Planet Earth and Blue Planet made their voice louder, to drown out the reactionary conservative voices with their blood lust to slaughter badgers, buzzards, hawks, and now in Europe returning wolves. The silent majority has to be heard by the politicians unless genocide of wolves and other animals dressed up as doctors' rounds continues unabated.</p> <p>If European countries ever want to be guardians of healthy ecosystems again, they can't afford not to have healthy wolf populations. No ecosystem can function to its utmost efficiency without apex predators.</p> | <p>dlenan</p> <p>The thing is really double edged.<br/>There were times, when quite a number of people were attacked and killed by wolves in Europe. Roughly half of them rabid, the other predatory. Because of their size, children were the majority of the victims. The numbers were in the order of magnitude of dozens per year in bad years. Google "wolf attacks". I don't know how dense the wolf population was in those days, compared to today.<br/>I have been a boy scout when I was young and we did a lot of hiking, sleeping outside and those things. I recon, with wolves in the vicinity, we wouldn't have done that.<br/>So it is recreating a bit of old nature, yes, but it costs a bit of freedom.<br/>So many species are on the brink of extinction because of our way of agriculture, roads, and habitat destruction. There is an awful lot to be done besides wolves.</p>  |
| <p>2<br/>Hugo Brand</p> <p>I'm generally amused (in a mirthless sort of way) when people claim to want to protect animals, provide animals with rights or that they care about the environment but then, at the mere mention of reintroducing wolves or some apex other predator, suddenly it's "Think of the livestock!"<br/>I'm reminded of what many of our fellow countrymen do to foxes, grouse, badgers and other wildlife and I think perhaps it'd be better if there were no animals left.<br/>It seems people don't want to allow animals to live their lives in peace--they want to use them for their own entertainment rather than simply feel proud to have a diverse ecology; to be proud of conservation.</p>   | <p>Aflawre</p> <p>This is a flawed idea.<br/>Any reserve large enough to allow wolves to roam and hunt is going to be far too large to effectively enclose. Cost to install, maintain and monitor would be prohibitive. Expensive deer fencing doesn't work in keeping deer out, wolf fencing wont work at keeping wolves in.<br/>Pretty soon you would have wolf populations outside of the designated reserve, so you may as well just release them into the wild than waste time and resources trying to keep them in a reserve. The deer population is pretty much out of control at the moment so the wolves can help keep that down.<br/>However the moment that livestock gets taken, or a child goes missing the old primal fear of wolves will surface. Then conservation shooters will get called in to take out wolves in specific areas, I don't like the idea of having to shoot wolves.<br/>There is an apex predator capable of controlling deer population, its called man. However our hands are tied with red tape and out-dated hunting seasons can't control the population if we can't shoot.</p> |

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| <p>3<br/>Tormentil</p> <p>Our point of view is we shouldn't have wolves in Norway," said Aas-Eng. "The original Scandinavian population died out in the 1950s. These wolves are reinvented from the big Finnish-Russian wolf population. It's not a good idea to allow them in. It makes for big conflict.</p> <p>Then learn to adapt. If wolves are in the area then maybe sheep are not the best livestock for the area without deterrents. Farmers have to adapt for market conditions all the time but as soon as the change comes from the natural world so many farmers reach for the gun first.</p> <p>In any case those wolves are keeping deer numbers down and you don't want to many of those. Just ask forestry and arable farmers.</p> | <p>SteveFactual</p> <p>So many people commenting on here that know nothing about wolves except from what so called environmentalist have told you. Most of the people commenting on how the wolf is good and just misunderstood have never encountered a wolf and definitely have never had to deal with them on a regular basis.</p> <p>Untill you live around them and deal with them your opinions mean nothing.</p> <p>Reality check. Wolves are an ecological disaster for wildlife, livestock and people.</p> <p>They do not balance ecosystems. They are not afraid of people. They spread diseases. In fact, they are a non-essential pest.</p> |
| <p>4<br/>RudolphMeadows</p> <p>I find the idea of culling wild animals chilling. I've tried reading about the dangers that wolves pose to people, since there are so many folktales, fairytales and stories about dangerous wolves, but I can't find evidence to support it. It seems to me it has always been an economic concern. Maybe in the old days, farmers really had no idea how to protect their animals from wolves other than killing the predators, but I simply cannot accept that nowadays we cannot come up with smarter solutions.</p>   | <p>Name</p> <p>Re-introducing wolves sounds good in theory, but it isn't so great when it is done in your backyard. True, they tend to avoid humans, but they will kill and eat your pets and other domesticated animals, even dogs and horses. It is easy to like wolves from a distance, where the chances of you encountering them are minuscule, but people who live on farms will not be happy about one more thing to worry about.</p>  |
| <p>5<br/>D718160</p> <p>The Norwegian position is incredible in the 21st century. One of the richest countries on Earth, low population density, supposedly forward thinking and environmentally friendly and they can't live alongside a native predator? Truly beggars belief.</p>  | <p>FlyingScud</p> <p>It all depends if the Europeans want to encourage their flocks of sheep.</p> <p>Robert Winder's excellent book 'The Last Wolf' indicates how England's boom in the Wool Trade came about because of the eradication of The Wolf from the land in 1209 – and how the nation developed further because of its extinction.</p>  |

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| <p>6<br/>dazzler</p> <p>We should be working hard in Europe to maintain a zero growth population level which would in turn place less pressure on rural areas to intensify farming. Wolves should live in harmony with humans.</p> <p>We have all we need, do we really desire so-called development on greenbelt lands in order to create a return on investment for money hungry industrialists? Let's get back to nature.</p>  | <p>kate king</p> <p>The problem is whatever people think on this forum, those who rear sheep and cattle for their livelihood will not welcome a predator who will definitely take their stock because it's easy prey. Where this happens, the wolves are poisoned and shot. It's no good town dwellers saying how it ought to be. Too often sentimentality and idealism causes more problems for the natural world than a pragmatic approach</p>  |
| <p>7<br/>Laughinlay</p> <p>I don't mind wolves, so long as they don't reintroduce werewolves, they're really scary.</p>   | <p>Laughinlay</p> <p>I don't mind wolves, so long as they don't reintroduce werewolves, they're really scary.</p>   |
| <p>8<br/>Delbart</p> <p>I can't help noticing that the countries most worried about wolves are the ones with the fewest. Nothing in this article from the Iberian peninsula, Italy or Romania.</p> <p>Most of the 2-3000 wolves in Spain are in the Northwest, which coincidentally is where most of the sheep are reared. Do wolves kill sheep? Absolutely, but to a great extent farmers have learned to coexist with wolves.</p> <p>The state does compensate farmers for losses but of course it is always highly distressing to farmers when they do lose sheep.</p> <p>It is perfectly possible to rear livestock in wolf country, but methods must be adapted to reduce stock predation as much as possible.</p> | <p>AvmichlCroz</p> <p>An academic study also comes this excellent quote:<br/>"It is often claimed that wolves do not attack humans – an assumption corroborated by the observations of most biologists today. By extension and without verification, this fosters the common belief that wolves have never attacked humans, except in incidents involving rabid wolves, deemed not worth dwelling upon. This reasoning by analogy flies in the face of past evidence."<br/>The study comments that the raising of factual historical records, of very frequent wolf attacks on people, has now become a taboo subject - facts are not welcome in this debate. This is one more case of politics over science and history.</p> |
| <p>9<br/>Steve Mac</p> <p>I live in Canada where we have lots of wolves and coyotes. All have have to say is keep your cats and small dogs locked up. Wolves find them yummy.</p>   | <p>The_Reverend_Flasher</p> <p>How dare these beautiful animals try to exist! Shoot them now!</p>   |
| <p>10<br/>Solluz</p> <p>So Norway, a society of 5 million people and a National Fund equal to 1 year Spanish (46 million) economy cannot assume the cost of 50 wolves. Something wrong is there.</p>  | <p>fritzhansschmitt</p> <p>Let's settle for "mostly harmless" unless your a sheep or in the sheep business. In which case I'd call them "statistically mostly harmless".</p>  |

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| <p>11<br/>JenBC</p> <p>Reducing the number of farmers being paid by the EU to overproduce, or who are too cheap to protect their animals properly, would be a better solution to creating a habitat for wolves which have a much more beneficial effect on the ecosystem than human beings.</p>                        | <p>Balaams_Ass</p> <p>Surely you would need wilderness for wolves and Europe is real-estate?<br/>Are theme-park reservation wolves living as wolves or as a side-show for the top predator...us?<br/>Wolves have their reputation for a reason and as predators they are in competition with us and 'we' really dont like it and anyway 'we've' pwned the planet....all of it.</p>                                      |
| <p>12<br/>surpluspop1</p> <p>The most vicious animal that walks this earth has two legs, not four. Put a shotgun in his hands and call him a farmer - ten times worse. Just look at how they slaughtered that lynx that escaped, despite being repeatedly told she was no danger to the public. I pity the wolves.</p> | <p>LionelBlurred</p> <p>Simple solution if rural areas don't want wolves, but city folks do - just reintroduce a few packs of wolves to cities. Plenty of green spaces for them, abundant food supply for the wolves and city dwellers get opportunities to see wolves. What's not to like?</p>   |
| <p>13<br/>olderiamthelessiknow</p> <p>I used to be a werewolf but I'm alright nowoooooo</p>  | <p>olderiamthelessiknow</p> <p>I used to be a werewolf but I'm alright nowoooooo</p>  |
| <p>14<br/>ThereisnoOwl</p> <p>The sad fact is that through no fault of their own European wolves have an image problem. And we all know who's to blame, don't we? Yes, I'm looking at you, Little Red Riding Hood.</p>   | <p>ThereisnoOwl</p> <p>The sad fact is that through no fault of their own European wolves have an image problem. And we all know who's to blame, don't we? Yes, I'm looking at you, Little Red Riding Hood.</p>   |
| <p>15<br/>fritzhansschmitt</p> <p>Let's settle for "mostly harmless" unless your a sheep or in the sheep business. In which case I'd call them "statistically mostly harmless".</p>  | <p>dazzler</p> <p>We should be working hard in Europe to maintain a zero growth population level which would in turn place less pressure on rural areas to intensify farming. Wolves should live in harmony with humans.<br/>We have all we need, do we really desire so-called development on greenbelt lands in order to create a return on investment for money hungry industrialists? Let's get back to nature.</p> |



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| <p>16<br/>Michac</p> <p>Wolves are an incredibly emotive subject in Norway, sure way of starting a fist fight. Unfortunately science has taken a back seat to politics, powerful farmers union and emotions. The science consistently shows the low numbers of sheep predated upon by wolves in comparison with other causes, however from the way people carry on about it here you would think sheep were being picked off one by one.</p> <p>It's a shambles of a serious debate. I heard the spokeswoman for the head of the farmers union last year on national radio unable to cite the number of wolves in Norway whilst simultaneously calling for a cull of 2/3 of the wolf population. The serious point being the numbers are already so low that any culling on such a scale (which will be happening) will lead to a non-viable population due to inevitable genetic inbreeding. Could do with some informed debate here with emotions left to one side.</p> | <p>Delbart</p> <p>When wolves do succeed in getting in to a sheep pen they don't only kill one sheep; several may be injured or killed; many others may be injured by running in to structures inside the pen when they panic. As you can imagine, it would not be a pretty sight. Contrary to what some believe, most farmers do care about the stock they keep and hate to see animals suffer unnecessarily just as anyone else might.</p>  |
| <p>17<br/><a href="#">BunchOfNumbers</a></p> <p>Horrid reading but the culling of a creature starting to thrive again. We really need to learn to share this planet with its other occupants. We don't have a right to claim everything and we don't have a right to kill anything we believe poses a threat. See also: the shark.</p>  | <p>Paulsimon</p> <p>In the areas being attacked by wolves - Italy and France - the main victims are small farmers (peasants /paysans/paisanos) who have a relationship with their animals and are often deeply affected by the slaughter (often the blood-lust killing of one or two bites with no eating).</p>   |
| <p>18<br/>decentcitizen</p> <p>I'm one of these Nordic city people who think wolves, bears etc belong to our nature. They must be protected well enough so that there's no risk of them disappearing in case of a disease outbreak or whatever. However, some of them can be hunted, too. It's also safer that way as they don't lose their fear of people. I think the only sensible solution is to leave it to the scientists to define suitable amounts, not farmers. Research is the way to define the acceptable numbers, taking into account all relevant factors to the best of our limited human knowledge.</p>   | <p>MDaotr</p> <p>I'm one of these Nordic city people who think wolves, bears etc belong to our nature. They must be protected well enough so that there's no risk of them disappearing in case of a disease outbreak or whatever. However, some of them can be hunted, too. It's also safer that way as they don't lose their fear of people. I think the only sensible solution is to leave it to the scientists to define suitable amounts, not farmers. Research is the way to define the acceptable numbers, taking into account all relevant factors to the best of our limited human knowledge.</p> |

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| <p>19<br/>JA0deZ</p> <p>I live in rural (mountain area of) Galicia NW Spain, around where we have three known packs. They do sometimes kill sheep/cattle and farmers are compensated (but most protect their herds with dogs and bringing them inside at night when it is cold.) The wolves do move down into more populated areas in harder weather but they are nervous of humans - we have seen them walk up our lane but they disappear at the first scent of us or our dogs. The risk from wolves is less than from some occasional erratic speeding car drivers on our country roads and they keep the (far more dangerous) wild boar population in check too.</p> | <p>holkeith</p> <p>Culling is necessary because the population is growing very rapidly especially in protected areas like the Mercantour on the French Italian border. If wolves could read the signs that indicate the limits of those boundaries there would be no problem. As for the farmers, those affected are small landowners pastoral farmers sheep farmers who are eco friendly stewards of the land. There are now endless reports of wolves attacking and killing entire flocks of sheep, the farmers are reimbursed 100% by the government but this is scant compensation for people that have lived this pastoral life for generations.</p> |
| <p>20<br/>awesomeants</p> <p>Compare how many wolves are killed by humans to how many humans are killed by wolves and go have a think about your point of view. I think if you actually think you will realise you're wrong.</p>   | <p>Nevermind</p> <p>The hug-a-hound squad aside, the fact is that wolves are vicious animals and care does need to be taken.</p>  |
| <p>21<br/>The_Reverend_Flasher</p> <p>How dare these beautiful animals try to exist! Shoot them now!</p>   | <p>point taken</p> <p>Wolves will eat small children if given the chance and many mainland Europeans are blissfully unaware of where wolves live. I won't be wandering into the woods in Germany to look for wild deer with my two year old,</p>  |
| <p>22<br/><a href="#">Sukkha</a></p> <p>Humans have caused waves of animal extinction throughout our short history of existence. Wherever we went colonising, animals got exterminated very quickly afterwards. We are just too greedy and mercilessly violent creatures. Yet, few compassionate individuals can rise above the norm to teach us beauty of sharing and living together.</p>  | <p>pfg2powell</p> <p>I'm glad I'm not the only one here astonished by the irony that "conservationists' " answer to the damage our human interference has caused to the world's wildlife is over the years is, er, more human interference. Are they really not in the slightest aware of it?</p>   |

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| <p>23</p> <p>worldwatch99</p> <p>This is all very virtuous and ecological, but just wait until a wolf decides to kill and eat a human child. If the wolf population is allowed to grow unchecked, this will happen.</p>   | <p>RudolphMeadows</p> <p>I find the idea of culling wild animals chilling. I've tried reading about the dangers that wolves pose to people, since there are so many folktales, fairytales and stories about dangerous wolves, but I can't find evidence to support it. It seems to me it has always been an economic concern. Maybe in the old days, farmers really had no idea how to protect their animals from wolves other than killing the predators, but I simply cannot accept that nowadays we cannot come up with smarter solutions.</p>  |
| <p>24</p> <p>Denis la Minaccia</p> <p>Thanks - please do continue educating people. Wolf's stigma is deep, but can be removed if people apply more common sense and less fairy tales.</p>   | <p>Random Name</p> <p>The wolf is an apex predator and has no place in civilised society.</p>  |
| <p>25</p> <p><a href="#">holkeith</a></p> <p>Culling is necessary because the population is growing very rapidly especially in protected areas like the Mercantour on the French Italian border. If wolves could read the signs that indicate the limits of those boundaries there would be no problem. As for the farmers, those affected are small landowners pastoral farmers sheep farmers who are eco friendly stewards of the land. There are now endless reports of wolves attacking and killing entire flocks of sheep, the farmers are reimbursed 100% by the government but this is scant compensation for people that have lived this pastoral life for generations.</p> | <p>Hugo Brand</p> <p>I'm generally amused (in a mirthless sort of way) when people claim to want to protect animals, provide animals with rights or that they care about the environment but then, at the mere mention of reintroducing wolves or some apex other predator, suddenly it's "Think of the livestock!"</p> <p>I'm reminded of what many of our fellow countrymen do to foxes, grouse, badgers and other wildlife and I think perhaps it'd be better if there were no animals left.</p> <p>It seems people don't want to allow animals to live their lives in peace--they want to use them for their own entertainment rather than simply feel proud to have a diverse ecology; to be proud of conservation.</p> |
| <p>26</p> <p>Random name</p> <p>While I would love for it to happen, I can't really see it happening. But yes, in an ideal world northern european countries could do an amazing job of rewilding and living a far more sustainable life along side a far more diverse range of flora and fauna if we all became vegetarian! However, the general public's love of meat will unfortunately get in the way and prevent this from happening.</p>  | <p>Mdaotr</p> <p>When done correctly, culling can be the least cruel option. If a wolf population in a particular area becomes too dense, the wolves will starve and/or predate livestock and venture into towns. The question is what is "too dense" a population? Only intelligent wildlife management models can provide the answer.</p>  |

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| <p>27<br/>Phil_Paris<br/>I thought that the most dangerous species of wolves were living in the financial districts of New York and London, but not in Norway...</p>  | <p>Phil_Paris<br/>I thought that the most dangerous species of wolves were living in the financial districts of New York and London, but not in Norway...</p>  |
| <p>28<br/><a href="#">ID718160</a><br/>Such a shame that Ireland has to live with our wildlife in a depleted state just because we're an island. Hopefully one day they will be reintroduced here.</p>  | <p>Antinoo<br/>I think the problem is that there's no nature anymore. What you call nature is a heavily modified landscape where humans are God. Europe is not fit for large predators anymore, at least a large part of it.</p>   |
| <p>29<br/><a href="#">Baranta</a><br/>Wolves are wonderful animals that deserve to live free in the remnants of their original wild realms.</p>   | <p>Amanda Musch<br/>Imagine you area wolf, you are hungry and you can choose between sheep who are nicely close to your shelter and you can have one without hunting for hours or a deer, which you would have to hunt for without being sure that you get it. What would you choose? Of course the first option. Wolves are not stupid.</p> |
| <p>30<br/>Mokwit<br/>This is probably not going to end well in areas where there is insufficient density of prey animals - I remember being told by someone who grew up at the foot of the Carpathian Mountans (yes, Romania not France/Belgium) that in a bad winter wolves would come down from the hills and go after the livestock - they had to literally be beaten back by the men of the village with huge dogs kept for this purpose.</p> | <p>BunchOfNumbers<br/>Horrid reading but the culling of a creature starting to thrive again. We really need to learn to share this planet with it's other occupants. We don't have a right to claim everything and we don't have a right to kill anything we believe poses a threat. See also: the shark.</p>                                |

## Appendix C

*New Ecological Paradigm Scale*

TABLE I. Revised NEP Statements

- 
1. We are approaching the limit of the number of people the Earth can support.
  2. Humans have the right to modify the natural environment to suit their needs.
  3. When humans interfere with nature it often produces disastrous consequences.
  4. Human ingenuity will insure that we do not make the Earth unlivable.
  5. Humans are seriously abusing the environment.
  6. The Earth has plenty of natural resources if we just learn how to develop them.
  7. Plants and animals have as much right as humans to exist.
  8. The balance of nature is strong enough to cope with the impacts of modern industrial nations.
  9. Despite our special abilities, humans are still subject to the laws of nature.
  10. The so-called "ecological crisis" facing humankind has been greatly exaggerated.
  11. The Earth is like a spaceship with very limited room and resources.
  12. Humans were meant to rule over the rest of nature.
  13. The balance of nature is very delicate and easily upset.
  14. Humans will eventually learn enough about how nature works to be able to control it.
  15. If things continue on their present course, we will soon experience a major ecological catastrophe.
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Source: Dunlap et al. (2000).

## Appendix D

*Information Form***1) Information and Consent Forms**

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**Study Title: The Effect of Normative Influence on Online Commenting Behaviour**

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**Purpose of the Research**

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The aim of the research is to investigate peoples' commenting behaviour in the presence of descriptive norms (What others are doing). The influence of these norms on an individual's opinions are also under examination.

**Invitation**

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You are being invited to consider taking part in the research study The Effect of Normative Influence on Online Commenting Behaviour. This project is being undertaken by Airt Carey.

**Consent**

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Before you decide whether or not you wish to take part, it is important for you to understand why this research is being done and what it will involve. Please take time to read this information carefully and discuss it with friends and relatives if you wish. Email (provided below) if there is anything that is unclear or if you would like more information.

**Do I have to take part?**

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You are free to decide whether you wish to take part or not. If you do decide to take part you will be asked to give consent. You are free to withdraw from this study at any time and without giving reasons. There is no monetary or academic reward for participation.

### **If I take part, what do I have to do?**

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On accepting to take part in the study individuals will be asked to fill in a short scale. They will then be requested to read an article and write one comment in the connected comment section. After contributing to the comment section, participants will be requested to fill in the same scale again. This process should take under 20 minutes.

### **How will information about me be used?**

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You are free to decide whether you wish to take part or not. If you do decide to take part you will be asked to give consent. You are free to withdraw from this study at any time and without giving reasons. There will be no monetary or academic reward for participation.

### **Who will have access to information about me?**

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Confidentiality of the participant will be ensured. Data provided by the participant will be encrypted and securely stored on a password-protected drive. All data will be stored for one year before being securely destroyed, only the researcher and supervisor will have access to it. All aggregated data will be reported anonymously.

### **What will happen to the results of the study?**

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The results of the research will be used for a thesis for the MSc in Cyberpsychology in the Dun Laoghaire Institute of Art, Design & Technology.

### **Who has reviewed the study?**

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This study has been approved by the Department of Technology and Psychology Ethics Committee (DTPEC).

*Consent Form***Consent Form**

---

1. **I confirm that I have read and understand the information sheet for the above study and have had the opportunity to ask questions. \***

*Tick all that apply.*

- Yes  
 No

/04/2018, 23:56

2. **I understand that my participation is voluntary and that I am free to withdraw at any time. \***

*Tick all that apply.*

- Yes  
 No

3. **I agree to take part in this study \***

*Tick all that apply.*

- Yes  
 No

4. **I understand that data collected about me during this study will be anonymised before it is submitted \***

*Tick all that apply.*

- Yes  
 No

5. **I agree to allow the data collected to be used for the current research \***

*Tick all that apply.*

- Yes  
 No

6. **I am over the age of 18 \***

*Tick all that apply.*

- Yes  
 No



*Demographic Form***2) Demographics**

## 7. Age \*

---

## 8. Gender \*

*Mark only one oval.*

- Female
- Male
- Non-Binary
- Trans
- Other: \_\_\_\_\_

*Debrief Form***6) Debrief**

Thank you for taking part in this research study.

The study in which you just participated was designed to investigate the effects of other comments on an individual's own commenting behaviour. Particularly, the effect of seeing how the opinions expressed in a majority of comments affects an individual's own commenting behaviour and in turn that affect on their private beliefs. The NEP scales were used to gauge ecological attitudes before reading the article and leaving your own comment and afterwards. Participants were randomly assigned to one of two experimental conditions or the control condition. In the experimental conditions participants were exposed to comments either of a majority in support of wolf reintroduction or a majority against it. The control condition contained no comments.

If you have questions about this study or you wish to have your data removed from the study, please contact me at the following e-mail address: [N00162898@student.ladt.ie](mailto:N00162898@student.ladt.ie). Alternatively, you may contact my supervisor, Catherine Friend at IADT, at [Catherine.Friend@ladt.ie](mailto:Catherine.Friend@ladt.ie).

We thank you sincerely for contributing and assure you that your data is confidential and anonymous.

If you were in any way negatively affected by the study please make use of the contacts on the following website:

<http://www.mentalhealthireland.ie/need-help-now/>

Appendix E

*Rated Comment spreadsheet*

<https://docs.google.com/spreadsheets/d/1R-98GvpncRMpLfiwhuiKMVd7Cp8oWj1iXMYwTfKThQ/edit?usp=sharing>

Appendix F

SPSS Output

*Frequencies*

| <b>Gender</b> |           |         |               |                    |       |
|---------------|-----------|---------|---------------|--------------------|-------|
|               | Frequency | Percent | Valid Percent | Cumulative Percent |       |
| Valid         | Female    | 37      | 56.9          | 56.9               | 56.9  |
|               | Male      | 27      | 41.5          | 41.5               | 98.5  |
|               | Trans     | 1       | 1.5           | 1.5                | 100.0 |
|               | Total     | 65      | 100.0         | 100.0              |       |

| <b>Nationality</b> |           |         |               |                    |       |
|--------------------|-----------|---------|---------------|--------------------|-------|
|                    | Frequency | Percent | Valid Percent | Cumulative Percent |       |
| Valid              | American  | 4       | 6.2           | 6.2                | 6.2   |
|                    | British   | 3       | 4.6           | 4.6                | 10.8  |
|                    | Danish    | 1       | 1.5           | 1.5                | 12.3  |
|                    | French    | 1       | 1.5           | 1.5                | 13.8  |
|                    | Irish     | 54      | 83.1          | 83.1               | 96.9  |
|                    | Russian   | 1       | 1.5           | 1.5                | 98.5  |
|                    | Swedish   | 1       | 1.5           | 1.5                | 100.0 |
|                    | Total     | 65      | 100.0         | 100.0              |       |

| <b>Experimental condition or control</b> |           |         |               |                    |  |
|--|-----------|---------|---------------|--------------------|--|
|  | Frequency | Percent | Valid Percent | Cumulative Percent |  |

|       |           |    |       |       |       |
|-------|-----------|----|-------|-------|-------|
| Valid | Pro-Wolf  | 21 | 32.3  | 32.3  | 32.3  |
|       | Anti-Wolf | 23 | 35.4  | 35.4  | 67.7  |
|       | Control   | 21 | 32.3  | 32.3  | 100.0 |
|       | Total     | 65 | 100.0 | 100.0 |       |

| Descriptive Statistics |    |         |         |       |                |
|------------------------|----|---------|---------|-------|----------------|
|                        | N  | Minimum | Maximum | Mean  | Std. Deviation |
| Age                    | 65 | 18      | 65      | 36.97 | 13.834         |
| Valid N (listwise)     | 65 |         |         |       |                |

| Descriptive Statistics                   |    |         |         |       |                |
|--|----|---------|---------|-------|----------------|
|  | N  | Minimum | Maximum | Mean  | Std. Deviation |
| New Ecological Paradigm Scale - Pre      | 65 | 2.00    | 5.00    | 3.680 | 0.60884        |
| Level of support for Wolf Reintroduction | 65 | 1.00    | 5.00    | 3.187 | 1.09694        |
| Valid N (listwise)                       | 65 |         |         |       |                |

*Ancova*

| Between-Subjects Factors          |             |           |    |
|-----------------------------------|-------------|-----------|----|
|                                   | Value Label | N         |    |
| Experimental condition or control | 1           | Pro-Wolf  | 21 |
|                                   | 2           | Anti-Wolf | 23 |
|                                   | 3           | Control   | 21 |

| Descriptive Statistics                                       |        |                |    |
|--|--------|----------------|----|
| Dependent Variable: Level of support for Wolf Reintroduction |        |                |    |
| Experimental condition or control                            | Mean   | Std. Deviation | N  |
| Pro-Wolf   | 3.5905 | 1.13221        | 21 |
| Anti-Wolf  | 2.7522 | 1.11146        | 23 |
| Control  | 3.2619 | 0.90304        | 21 |
| Total  | 3.1877 | 1.09694        | 65 |

| <b>Levene's Test of Equality of Error Variances<sup>a</sup></b> |     |     |       |
|---|-----|-----|-------|
| Dependent Variable: Level of support for Wolf Reintroduction    |     |     |       |
| F   | df1 | df2 | Sig.  |
| 1.292   | 2   | 62  | 0.282 |

9. Nationality \*

| <b>Tests of Between-Subjects Effects</b>                     |                         |    |             |       |       |                     |                    |
|--|-------------------------|----|-------------|-------|-------|---------------------|--------------------|
| Dependent Variable: Level of support for Wolf Reintroduction |                         |    |             |       |       |                     |                    |
| Source   | Type III Sum of Squares | df | Mean Square | F     | Sig.  | Partial Eta Squared | Noncent. Parameter |
| Corrected Model  | 9.214 <sup>a</sup>      | 3  | 3.071       | 2.764 | 0.050 | 0.120               | 8.291              |
| Intercept  | 8.586                   | 1  | 8.586       | 7.726 | 0.007 | 0.112               | 7.726              |
| NEP1   | 1.329                   | 1  | 1.329       | 1.196 | 0.278 | 0.019               | 1.196              |
| Condition  | 6.487                   | 2  | 3.243       | 2.918 | 0.062 | 0.087               | 5.836              |
| Error  | 67.796                  | 61 | 1.111       |       |       |                     |                    |
| Total  | 737.500                 | 65 |             |       |       |                     |                    |
| Corrected Total  | 77.010                  | 64 |             |       |       |                     |                    |

| <b>Tests of Between-Subjects</b>         |                             |
|--|-----------------------------|
| Dependent Variable: Level of support for |                             |
| Source                                   | Observed Power <sup>b</sup> |
| Corrected Model                          | 0.640                       |
| Intercept                                | 0.781                       |

|                 |       |
|-----------------|-------|
| NEP1            | 0.190 |
| Condition       | 0.549 |
| Error           |       |
| Total           |       |
| Corrected Total |       |