

# The Role of Emotions in Stimulating Pro-environmental Behaviour on Social Media



**Name:** Ning Fan  
**Student number:** 901126237050  
**Major:** Marketing and Consumer Studies, Consumer Specialization  
Management, Economic, and Consumer Studies  
**Chair Group:** Marketing and Consumer Studies (MCB)  
**Supervisors:** Dr. Marleen Onwezen; Dr. Ilona de Hooge  
Dr. Paul Ingenbleek  
**University:** Wageningen University and Research Centre  
**Co-supervised by:** Landbouw-Economisch Instituut, Wageningen UR  
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## Abstract

As many environmental scientists have noted, environmental problems can only be solved by the promotion of people's pro-environmental behaviour. To encourage pro-environmental behaviour, it is important to know which intervention strategy is most effective under which circumstance for a particular group of people. The present study investigated the function of a media message in motivating people's pro-environmental behavioural intention in sharing a monetary donation request (for help protecting polar bears) with others. It aimed to integrate research on media as well as research on the determinants of pro-environmental behaviour, and to explore the function of emotions and impression management level as the underlying mechanism.

In addition to literature research, two scenario-based experiments were conducted by the current study. The experiments explored the effect of media channel in motivating people's intention in sharing the donation request; the role of emotions in stimulating people's behavioural intentions through social media; and the effect of one's impression management level on their emotional responses towards the monetary donation request.

The findings of the study showed that, a donation request provided via different media channels and with different interruption levels can have consequential impacts on people's decision-making. The research has also shown that people's experienced emotions mediate the effect of a media message on their pro-environmental behavioural intention. Furthermore, it has shown that with regard to a pro-environmental message, people's impression management level not only has an effect on their experienced emotions, but also on their pro-environmental behavioural intentions.

The results of the current study addressed some of the pro-environmental behavioural intention related issues and shows implications of how a pro-environmental message can be more efficiently used and spread by marketers and policy makers in motivating people's pro-environmental behavioural intentions. The study offers yet another step in upgrading the existing understanding of the function of media channel and role of emotions in pro-environmental behaviour related topics.

**Key words:** Social media; basic emotion; self-conscious emotion; impression management level; Pro-environmental behaviour; informational governance; media channel

# Content

1. Introduction.....	4
2. Theoretical Framework.....	7
3. Experiments .....	19
3.1 Study 1 .....	19
3.1.1 Methods of Study 1 .....	19
3.1.2 Results of Study 1 .....	24
3.1.3 Discussion of Study 1 .....	30
3.2 Study 2 .....	33
3.2.1 Methods Study 2 .....	33
3.2.2 Results of Study 2 .....	38
3.2.3 Discussion of Study 2 .....	51
4. General Discussion .....	53
5. Conclusion .....	61
ACKNOWLEDGEMENTS .....	62
REFERENCES .....	63
Appendix 1 .....	70
Study 1 Facebook condition .....	70
Study 1 E-mail condition .....	74
Study 1 Newspaper condition .....	75
Appendix 2 .....	76
Study 2 Facebook condition .....	76
Study 2 E-mail condition .....	80
Study 2 Newspaper condition .....	81

## 1. Introduction

Consumers nowadays are not just individuals responsible solely for the outcomes of their decisions, they are also citizens with social responsibilities (Solomon, 2006), whose personal behaviour may have serious consequences on the social or natural environment where they live (e.g., Gilg, Barr & Ford, 2005; Steg & Vlek, 2009). Since environmental quality strongly depends on human behavioural patterns, to deal with environmental issues it is essential to begin with guiding individuals to behave in a pro-environmental manner (Steg & Vlek, 2009). Although increasingly more and more people have realized the importance of their behaviour towards the environment, their intention for showing more pro-environmental behaviour is not always turned into actions (Vermeir & Verbeke, 2006).

Nowadays people are living in a digital world where social media plays an important role in their daily lives. Messages spread on social media not only able to guide people's behaviour towards a more pro-environmental pattern (Solomon, 2006; Kietzmann et al., 2011), to a certain extent social media messages are also able to create massive shock waves in society. In today's Internet era, people have access to and receive information from various social media channels. Onwezen (2014) found that different social media channels are able to stimulate people's self-evaluation process by considering that they are either a part of, or differentiated as a separate social group. Thus, Facebook is considered as a *public* social media channel in the current study, because a users' information about their self, are shared with, and publicity visible by everyone in their social networks (Heine, Takemoto, Moskalenko, Lasaleta & Henrich, 2008). Whereas, E-mail is considered as a *private* social media channel because E-mails are sent to individuals to a private accessible account, and users usually read and reply to E-mail messages within this privacy (Oxford Dictionary, 2014). People are separate from their social group In E-mail context.

Due to the fact that different social media channels have different characteristics and functions, users' behavioural reactions after reading messages from different social media channels are expected to be different. Based on author's best knowledge, the different impacts of Facebook and E-mail messages on users' behavioural reactions are yet unknown. Such knowledge is needed since knowing which type of social media works best in presenting certain types of messages can be helpful in motivating people's pro-environmental behaviour. In order to find out whether different social media channels work differently in motivating one's pro-environmental behaviour,

the function of the public media Facebook and the private media E-mail in guiding one's pro-environmental behaviour will be compared in the current study.

In addition, it is proposed that, the reason that readers have different behavioural responses towards the same message posted on different social media channels is because of their experienced emotions. The present study therefore includes emotion as a mediator, and aims to contribute to a better understanding of the function of emotions in mediating the effects of social media messages on individual's pro-environmental behaviour. There are two different types of emotions, the basic emotions (i.e., joy, sadness; surprise; disgust; anger; fear) and self-conscious emotions (i.e., pride, shame; embarrassment; gratitude; hubris; guilt). Unlike basic emotions that are biologically generated from one's internal state, people experience self-conscious emotions only when they are able to evaluate their behaviour from an external perspective, or knowing their behaviour is being evaluated by others (e.g., Tracy & Robins, 2004; Tracy & Robins, 2007; Leary & Tangney, 2003). Because people intend to behave in socially appropriate ways in order to be highly valued by others, it is therefore proposed that self-conscious emotions play a more important role in motivating one's pro-environmental behaviour compared with basic emotions. In addition, it is proposed that self-conscious emotions are more likely to be generated by Facebook rather than by private social media channel E-mail. This is because on the publicly visible social networking website Facebook, users may have more concerns about how their behaviour will be evaluated by others.

Not only may one have different emotional responses when reading the same message from different social media channels, when reading exactly the same message from the same social media channel, people's emotional responses may also vary. Among all possible reasons, one's sensitivity of what other people think of them (referred as one's 'impression management level') may explain why different people have different emotional responses to the same social media message. The present paper therefore introduces 'impression management level' as a moderator, proposing that one's sensitivity to what others think of them moderates the effect of social media on their emotions.

Based on existing theoretical relevance, four research questions are proposed:

*Main research question: How do Facebook and E-mail differ in stimulating emotions and guiding pro-environmental behaviour?*

*Sub research question 1: How do Facebook and E-mail differ in terms of stimulating readers' pro-environmental behaviour?*

*Sub research question 2: Does the effects of social media messages on readers' pro-environmental behaviour occur due to basic or self-conscious emotions?*

*Sub research question 3: What is the difference between self-conscious emotions (i.e., pride, guilt, shame, embarrassment, gratitude, hubris) and basic emotions (i.e., happiness, sadness, fear, surprise, anger, disgust) in stimulating pro-environmental behaviour?*

*Sub research question 4: How do people with different impression management levels differ in the effect of social media on emotions?*

The present study aims to provide theoretically relevant information for researchers on mechanisms that underlying a wide range of psychological phenomena. These include such effects as one's impression management level on emotional responses, and the role of emotion in motivating people's pro-environmental behaviour through social media. The empirical results from the study will provide a better understanding for commercial companies, political authorities and non-governmental organizations about which type of social media can be best used for particular groups of people; and which type of emotion works most efficiently for motivating certain behaviour. Together this study is intended to help them develop effective informational governance strategies in guiding people's pro-environmental behaviour via social media.

## 2. Theoretical Framework

### Pro-environmental behaviour

Over the past 50 years, people have changed ecosystems more rapidly and extensively than in any comparable period of time in human history (Millennium Ecosystem Assessment, 2005). The rapid speed of industrialization, together with inconsiderate use of the natural environment, has resulted in many environmental problems including global warming, air pollution, water shortage, environmental noise, desertification and decline of biodiversity. Environmental quality strongly depends on human behaviour patterns (e.g., Gilg et al., 2005). As many environmental scientist have noted, long-term environmental sustainability can only be achieved from the widespread recognition of environmental problems, and the promotion of pro-environmental behaviour (Steg & Vlek, 2009; De Groot & Steg, 2010).

De Groot & Steg (2010 p.368) defined pro-environmental behaviour as “by its positive impact on the availability of materials or energy from the environment, and/or by the extent to which the behaviour positively alters the structure and dynamics of ecosystems or the biosphere.” According to Kollmuss and Agyeman (2002), pro-environmental behaviour can be classified as direct pro-environmental behaviour and indirect pro-environmental behaviour. Direct behaviour includes recycling, driving less or buying organic food. Donating money, political activities and educational outreach are considered as indirect behaviour. Although indirect pro-environmental behaviour does not have direct impact on the environment, it is as equally important as direct behaviour. Because it is hard to track people’s direct pro-environmental behaviours in a short-term, this study will focus on studying an indirect pro-environmental behaviour, people’s behavioural intention in response to a donation request.

Over the last three decades, researchers have developed numerous frameworks to analyse possible factors that influence people’s pro-environmental behaviour from psychological and sociological perspectives (e.g., Burgess, Harrison & Filius, 1998; Fietkau & Kessel, 1981; Hines, Hungerford & Tomera, 1986-87). However, the answer to the questions of what shapes pro-environmental behaviour and what are the barriers to the promotion of pro-environmental behaviour are extremely complex and cannot be visualized through one single framework (Kollmuss & Agyeman, 2002). Nevertheless, the framework developed by Fietkau and Kessel (1981) is one of the most influential and commonly used frameworks for analysing pro-environmental behaviour (Kollmuss & Agyeman, 2002). Their model included five factors that

influence people's pro-environmental behaviour (*attitudes and values; possibility to act ecologically; knowledge; behavioural incentives; perceived feedback about ecological behaviour*). Of these, the factor 'perceived feedback about ecological behaviour' engages one in pro-environmental behaviour because it provides positive reinforcements to support pro-environmental behaviour. These positive reinforcements can either be intrinsic (e.g., self satisfaction of doing the right thing), or extrinsic (e.g., pro-environmental behaviour is a socially desirable action). The present study focus on investigates the function of extrinsic reinforcement in motivating people's pro-environmental behaviour. Within the scope of the present study, it is expected that people's needs to receive positive feedback from others will be regarded as an important motive for people to behave pro-environmentally, and it will be used to supporting all hypothesises of the present study.

### **Social media**

As defined by Kaplan and Haenlein (2010, p.61), social media is "a group of internet-based applications that build on the ideological and technological foundations of Web 2.0, and that allow the creation and exchange of User Generated Content". Compare with traditional media such as newspapers and magazines, social media work interpersonally. Its "social" character enables a more social process, which allows one to receive, to distribute, or to exchange information with other users (Kietzmann, Hermkens & McCarthy, 2011). In today's Internet era, people have access to and receive information from various social media channels, such as Facebook (a social networking website that makes one keep in touch with their social networks); Twitter (online social networking platform that enables users to post and read less than 140-character messages); YouTube (a website designed for sharing videos); E-mail (transmission of messages by telecommunication).

Some researchers have stated that E-mail cannot be classified as social media because E-mail messages do not meet the requirement of social media classification, i.e., "the need to be published either on a publicly accessible website or on a social networking site accessible to a selected group of people" (Kaplan & Haenlein, 2010). However, in a broader view, E-mail is considered as a type of social media by most researchers. According to Kietzmann, Hermkens and McCarthy (2011), the word 'social' implies exchanges between people. Just like the use of Facebook or Twitter, E-mail users are able to share messages with multiple receivers simultaneously, and distributed the message to widespread of users indirectly (Taylor, Strutton & Thompson, 2012). Because of this reasoning, E-mail will be considered as a type of social media in this study.



Because E-mail (2504 million, 2014 data) and Facebook (1415 million, 2015 data) are the most often used media channels (Statista, 2015; Radicati, 2015), the current study will particularly focus on investigating the effect of E-mail and Facebook on people's pro-environmental behaviour. People use Facebook to stay connected with their friends and families, to discover what is going on in the world, and to share and express what matters to them (Facebook, 2014). Because a Facebook user's information about their self, including likes or dislikes, hobbies, and personal musings via "wall posts", "status updates", and "shared links" are shared with, and publicity visible by their Facebook friends (Heine, Takemoto, Moskalenko, Lasaleta, Henrich, 2008), it is therefore considered as a *public* social media channel. E-mail is defined as "Messages distributed by electronic means from one computer user to one or more recipients via a network" (Oxford Dictionary, 2014). Because E-mails are sent to individuals to a private accessible account, and users usually read and reply to E-mail messages within this privacy, it is therefore considered as a *private* social media channel. Onwezen (2014) found that social media channels are able to stimulate people's self-evaluation process by considering that they are either a part of, or differentiated as a separate social group. For example, providing messages via Facebook tends to activate the idea that one is a part of a significant social group. By contrast, providing messages via E-mail inclines to activate the idea that one is a unique individual differentiated from all others.

Different self-evaluation is able to guide individuals to follow either social norms or personal standards (Verplanken, Trafimow, Khusid, Holland & Steentjes, 2009; Ybarra & Trafimow, 1998). Because people in public are more sensitive about their behavioural consequences in the context of social norms (Onwezen, 2014), and have more concerns about how they think they are being evaluated by other people (Leary, 2007), they prone to behave in a socially desirable manner (e.g., Feaster, 2010). By contrast, individuals in a private context are less sensitive about the evaluation of their behaviours in the context of social norms, they inclined to behave in a way following their personal attitudes or values rather than in a socially acceptable or socially desirable manner (Verplanken et al., 2009; Ybarra & Trafimow, 1998).

Because people's pro-environmental behaviour is better motivated in a publically visible environment than in a private context, it is therefore proposed that pro-environmental behaviour is more likely to be motivated via the public media channel Facebook than via the private media channel E-mail. The following hypothesis is proposed:

- *Hypothesis 1: Facebook motivates more pro-environmental behaviours*

*compared to E-mail.*

### **Basic emotions and self-conscious emotions**

Emotion is a fundamental mechanism at the basis of human evolution and adaptation to the environment (Carrus, Passafaro & Bonnes, 2008). Human beings are emotional in nature and they make emotional decisions. As a complex series of psychophysical stimulants, emotions arise spontaneously 3000 times faster than rational thought (Tang, Zhang, Sun, Rao, Yu, Chen & Fong, 2012). Different definitions have been given by different emotion researchers over the years. According to Frijda (1986), emotion is a subjective and evaluative experience that arises when an individual is evaluating an external or mental event that is relevant to a personal goal. I prefer to use this definition for the current study because it includes both evaluative and behavioural components and these are most relevant to the content of the present study. All emotional experiences take place in a social environment (Lewis, 2000), and can be classified into the categories of basic emotions and self-conscious emotions.

Anger, fear, disgust, sadness, happiness, and surprise are six commonly agreed *basic* emotions. All basic emotions emerge early in childhood, and have discrete, universally recognized facial expressions (Tracy & Robins, 2004). From an evolutionary-biopsychological perspective, emotions are called basic because of their hypothesized role in evolution (e.g., Plutchik, 1980). Instead of fulfilling and expressing one's social needs, basic emotions serve survival and biological functions (Izard, 1989), and are primary in ontogenetic development (Izard & Malatesta, 1987). From the cognition perspective, basic emotions are often "cognition-independent". The occurrence of basic emotions requires a simple cognition processes, and one does not need to give much thought input (Le Doux, 1996; Izard, Ackerman & Schultz, 1999). To experience fear, for example, individuals simply appraise an event as threatening their survival goals (Lazarus, 1991). Most importantly, basic emotions are innate biological emotions generated from one's subjective worlds (Izard, 1972). The emergence of basic emotions does not necessarily require people to objectively evaluate their behaviour from an external perspective (Tracy & Robins, 2007).

Unlike basic emotions that are generated from one's subjective worlds, *self-conscious* emotions, such as pride, guilt and shame, are "emotions that arise from people's inferences about others' evaluation of them, particularly with respect to their social acceptability" (Leary, 2007). Self-conscious emotions play a central role in guiding and regulating individual's thoughts, feelings, intentions and behaviours (e.g., Dickert,

Sagara & Slovic, 2011; Eisenberg, 2000; Onwezen, 2014; Campos, 1995; Fischer & Tangney, 1995; Tracy & Robins, 2004; Onwezen, Bartels & Antonides, 2013). As Tracy and Robin (2004, p.105) noted, “when it comes to motivating complex human behaviour, self-conscious emotions are perhaps the most basic.” The relevance of self-conscious emotions in the context of pro-environmental decision making is demonstrated by a range of studies (e.g., Harth et al., 2013; Dickert et al., 2011; Eisenberg, 2000). Self-conscious emotions are shown to have a self-regulatory function, they provide immediate and salient feedback on one’s social as well as moral acceptability (Leary & Tangney, 2003), and guide behaviour according to social standards (Beer, Heerey, Keltner, Scabini & Knight, 2003; Young & Peyton, 2008). For example, pride can affectively drive people to behave in (pro-environmental) ways in accordance with existing social mores that make them proud of themselves. By contrast, shame and guilt help people move away from immoral or unethical behaviour because people intend to avoid the negative subjective feeling of ashamed or guilty (Tracy & Robins, 2004; Hynie, MacDonald & Marques, 2006; Onwezen et al., 2013; Leary, 2007).

Tracy and Robins (2004) identified five major distinctions that make self-conscious emotions differ from basic emotions. These distinctions include: 1) self-conscious emotions require self-awareness and self-representations; 2) self-conscious emotions emerge later in childhood than basic emotions; 3) self-conscious emotions serve primarily socialized needs; 4) self-conscious emotions do not have discrete, universally recognized facial expressions; 5) self-conscious emotions are cognitively complex.

Among all five distinctions, the primary distinctive feature of self-conscious emotions is that the occurrence of self-conscious emotions cannot be elicited in the absence of self-awareness and self-representation processes (Lewis, 1992; Tangney & Dearing, 2002). Self-awareness processes allow a person to be aware of themselves, and come to understand that they are an object of other’s attentions (Lewis, 2011). Self-awareness in turn activates the self-representation process, which make individuals focus attention on reflecting the relational, social and collective self on vis-à-vis another person’s perspective (Tracy & Robins, 2007). Together, self-awareness and self-representation processes allow individuals to make reflexive self-evaluations of their behaviour. The so-called ‘self-evaluation’ does not concerns how people evaluate themselves, but rather concerns how people think they are being evaluated or might be evaluated by others (Leary, 2007; Heerey, Keltner & Capps, 2003). People will behave in ways that can meet these evaluative standards when they

are able to evaluate their behaviour from an external perspective, or have concerns about whether their behaviour are considered as morally and socially appropriate by others. Moreover, meeting the moral standards that are expected from external sources will stimulate people's positive emotions (such as pride) and make them feel proud of themselves, and help them avoiding negative emotions (shame) or the feeling of being ashamed of themselves.

Based on above reasoning, it is proposed that self-conscious emotions play an important role in guiding individuals' pro-environmental behaviour. By contrast, because the occurrence of basic emotions does not necessarily require people to self-evaluate their own behaviours (Tracy & Robins, 2004), it is assumed that basic emotions are less effective in motivating pro-environmental behaviour compared with self-conscious emotions.

- *Hypothesis 2b: Self-conscious emotions motivate more pro-environmental behaviour compared to basic emotions.*

It is proposed that self-conscious emotions are able to guide pro-environmental behaviour because it requires one's self-evaluation towards their own behaviour from an external perspective. However, such self-evaluation cannot be equally generated in different circumstances. As a public communication platform, Facebook is able to stimulate individuals' self-evaluation, as people using it consider themselves part of a social group (Onwezen, 2014). Facebook users are thus more sensitive about whether they behave in socially appropriate ways (Onwezen, 2014; Leary & Tangney, 2003) and are more likely to evaluate their behaviour from an external perspective (Leary, 2007). By contrast, as users are able to receive and reply to messages privately, the private social media channel E-mail does not necessarily include external evaluation of their opinions. Moreover, because people in private contexts intend to focus attention on their own attitudes and values, they are less sensitive about whether their behaviour will be socially appreciated under social norms (Verplanken et al., 2009; Ybarra & Trafimow, 1998; Onwezen, 2014). Consequently people's self-conscious emotions are less likely to be generated by E-mail messages.

Not only does Facebook create an environment that makes one's self-evaluation possible, as the public communication platform that serves social needs, Facebook is able to generate self-conscious emotions. As Goffman (1967; 1959) noted, in essentially every social encounter with other human beings, individuals are constantly working to present themselves in favourable ways in order to convince others to consider them as moral individuals. In determining what situation elicits which

emotion and how emotions are expressed, social influence plays an increasing role (Lewis, 2000). To generate self-conscious emotions, for example, people not only have to understand the social standards that determine appropriate social behaviour, and more importantly, they have to realize that their behaviour will be evaluated by others according to these social standards (Stipek, 1983; Lewis, 1992; Lewis, 2000). This leads to another distinctive feature of self-conscious emotions, in that they facilitate the attainment of a range of complex social goals. These social goals include the maintenance or enhancement of status roles; prevention of rejection from one's social group; promote the attainment of getting along and getting ahead in social interactions (Tracy & Robins, 2004; Keltner & Buswell, 1997; Tracy & Robins, 2007). As people's self-conscious emotions drive them to behave in socially appropriate ways in environments where their social interactions and intimate relationships are presented, (Baumeister, Stillwell, & Heatherton, 1994; Leith & Baumeister, 1998; Leary & Tangney, 2003), it is assumed that Facebook generates more self-conscious emotions than basic emotions in fostering pro-environmental behaviour.

- *Hypothesis 2a: Facebook stimulates more self-conscious emotions compared to E-mail.*

### **Mediating role of emotions**

As discussed above, self-conscious emotions are more likely to be stimulated by Facebook than by E-mail, and these emotions motivate more pro-environmental behaviour than basic emotions. It seems logical to say that the reason Facebook motivates more pro-environmental behaviour than E-mail (Hypothesis 1) is because of the self-conscious emotions it generates. However, it is not known if this assumption is true. There may be the possibility that the self-conscious emotions generated from Facebook lose their effectiveness in continuously motivating pro-environmental behaviour (for example because the intensity of the emotion stimulated by Facebook is not strong enough).

It is also possible that the function of self-conscious emotions in motivating pro-environmental behaviour will be lost in the context of Facebook (for example because Facebook is not "social" enough in stimulating one's self-evaluation process from an external perspective). In order to discover whether Facebook motivates more pro-environmental behaviour because of emotion, it is proposed that emotions fully mediate the effects of social media on pro-environmental behaviour. This considers that self-conscious emotions generated by Facebook are able to stimulate pro-environmental behaviour, whereas basic emotions generated by E-mail are not

able to stimulate pro-environmental behaviour.

The following hypotheses is proposed:

- *Hypothesis 2c: Emotions fully mediate the effects of social media on pro-environmental behaviours, such that self-conscious emotions generated by Facebook are able to stimulate pro-environmental behaviour, whereas basic emotions generated by E-mail are not able to stimulate pro-environmental behaviour.*

### **Impression management**

Much of peoples' time is spent in the company of other people. The impressions people make on others have implications on how others perceive, evaluate, and treat them. In order to maintain favourable impressions, and to avoid potential downfalls that may tarnish one's personal image, sometimes individuals behave in ways to create certain impressions in the eyes of people they associate with (e.g., Goffman, 1967; Goffman, 1959; Leary, 1996; Schlenker & Pontari, 2000; Feaster, 2010; O'Sullivan, 2000; Leary & Kowalski, 1990). People's intention to establishing, maintaining, or refining their images in the minds of others is referred as "Impression management" (cf, Goffman, 1959; Leary & Kowalski, 1990; Gilmore, Stevens, Harrell-Cook & Ferris, 1999). Scientific interest in this phenomenon can be traced to Goffman (1959). In his seminal book, Goffman discussed the importance of one's impression in the construction of the social reality. Over time, different researchers have used different terminologies when referring to "impression management". For example, it appears as "impression management" in Leary & Kowalski's (1990) article; as "self-presentation" in Goffman (1959)'s book; as "public self-consciousness" in Fenigstein, Scheier & Buss's (1975) study; and as "self-monitoring" in Snyder's (1974) article. Although some researchers state that there are slightly distinctions between each term (cf., Leary & Kowalski, 1990; Eliot, 2013; Schneider, 1981), most of the writers use different terms interchangeably (Leary & Kowalski, 1990). References cited in this article were found by searching for different terms as key words. Because as pointed out by Schneider (1981), "impression management" is broader and more encompassing than the other terms listed, hence the term "impression management" will be used consistently in this study.

People use their behaviour as a means of communicating the image of themselves to other people in their social interactions. According to Baumeister (1981), there are two main motives engaged in impression management. The first is to please audiences

by presenting socially appropriate images. By presenting socially appropriate images, individuals obtain the reward of making their audience think favourably of them. The second motivation is self-fulfilment. People not only want to become their ideal selves, they also want others to perceive them as their ideal selves (Cohen, 1959). Consequently people tend to create, maintain and modify their self-images in front of others. Both motivations appear to promote helpful behaviour and to promote conformity to general social norms.

### **Impression management concerns in private and public environments**

People's behaviour are influenced by their surrounding environment and the perceived audience (Goffman, 1959; Leary, 1995; Schlenker & Pontari, 2000). As suggested by objective self-awareness theory, just as people can comprehend the existence of environmental stimuli, they are also aware of their own existence (Duval & Wicklund, 1972). People intend to make their social interactions highly valuable (Goffman, 1959; Leary, 1995). If people are concerned with what their behaviour communicates to other people in public situations, they are motivated to behave in socially desirable ways. In the private context, however, people's self-impression concern is removed because they know that their behaviour will not be evaluated by others (Goffman, 1959; Leary, 1995; Baumeister, 1981), therefore in private people are more likely to try out different behaviour.

People's behaviour differences in public versus private contexts have been shown by empirical research (e.g., Kidder, Belletirre & Cohn, 1977; Satow, 1975; Reis & Gruen, 1976). In particular, Satow (1975) conducted a laboratory experiment for testing people's donation behaviour under public versus private conditions. The empirical evidence demonstrated that publicity contributes to altruism in adults. When people are quite certain that their donation behaviour is observed by other people, their donation amount is higher compared with people who believe that no one will be aware of their behaviour. In addition to this, in a money allocation experiment, Reis and Gruen (1976) examined the role of impression management in social exchanges. Subjects were requested to distribute a certain amount of money to themselves or to other subjects. The results showed that people's generosity to others is not only influenced by whether their behaviour would be known by others, but also determined by who would know (the identity of the audiences).

Most of the research on people's altruistic behavioural differences between private and public contexts were done in the 1970's or 80's. Public conditions in these studies were often created by sending subjects to facilitated laboratories with actual observers.

In today's Internet era, the means of communication are changing, and the ways people contact each other are not merely limited to face-to-face communication. Social communication platforms and telecommunication channels play an increasingly important role in people's daily lives. Nevertheless, in these computer-mediated environments, people also engage in managing their impressions (Zhao, Grasmuck & Martin, 2008; Walther, Van Der Heide & Hamel, 2009). Due to the fact that people's actions on Facebook can be viewed by their Facebook friends, it is expected that Facebook users will have more concerns about the potential consequences of their actions towards Facebook messages. By contrast, because people's reactions towards an E-mail message will not be known by others, it is expected that they will have comparably less concerns with their reactions to E-mail messages.

### **High and low impression management level**

Although people may behave differently in public versus private contexts, this expectation may not apply to all people. Different people have different levels of concerns with respect to their public images, and these concerns will determine how hard people make conscious effort in controlling their behaviour. The tendency of people's awareness of their behaviour that has an effect on others is considered as "one's impression management level" (e.g., Fenigstein et al., 1975). High impression management people are aware of themselves as social objects, they often have many concerns about their public appearance and the consequence of their behaviour on their personal images. By contrast, low impression management people have less awareness of themselves as social objects, and they do not care much about their public appearance or how their behaviour will be evaluated by others (Buss, 1980; Carver & Scheier, 1985).

The tendency of people's awareness of their behaviour that has an effect on others in a way determines their pro-environmental performances. As Baumeister (1982) noted, a wide range of social behaviour is, or can be determined, or produced by the tendency of one's concerns of the consequences of their behaviour in the mind of others. Take people's altruistic performances as an example. Theoretically, a truly altruistic behaviour is indifferent to one's own gain or benefit, and should be motivated by concern for the well-being of others or to the surrounding environment. However, empirical evidence demonstrated that altruistic behaviour is at least partly motivated by one's desire to be recognized as a generous person. In 1975, Satow conducted an experiment to examine the influence of people's need of social approval on their helping behaviour. In her study, participants were asked to make donations to a research fund. The research results showed that individuals high in need for

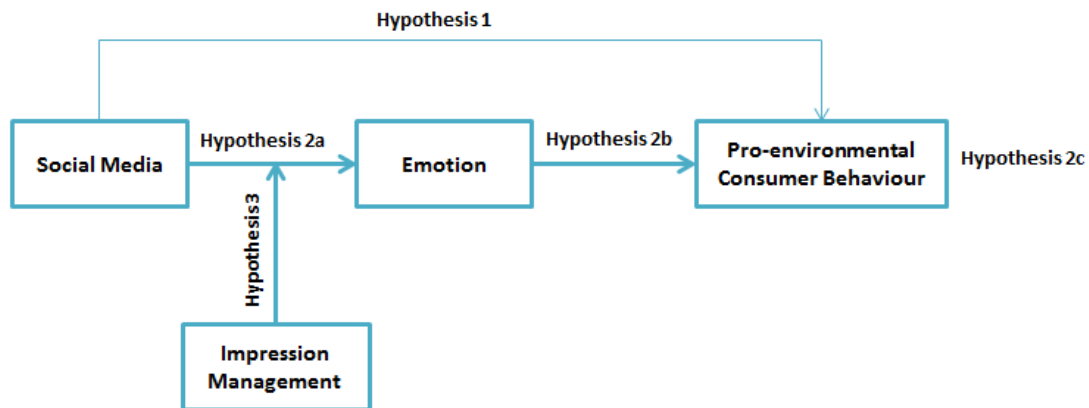


approval from others donated more money than those low in need for approval from other people. From these research results, Satow (1975) states that a person's tendency to help in a given situation is a joint function of (a) their expectancy that social approval will be the consequence of their act, and (b) their desire for social approval. Although the psychosocial attribute tested in Satow (1975)'s study was "needs for social approval", one's expectancy for approval from other people can also be seen as their impression concerns of how their behaviour will be evaluated by others. Thus, Satow's (1975) research results also apply to the present study. In a way, it provides empirical relevance to argue that people with different degrees of impression concerns may behave differently in a given situation.

With reference to the empirical relevance provided above, most previous impression management research have focused on the relationship between impression management and behaviour. In 1982, Baumeister stated that, "the relations between self-presentation (impression management) and emotion have not been extensively researched". A few years later, a similar statement was made by Flett, Blankstein, Pliner & Bator (1988). This was "given this recent interest in impression management, it is surprising that there are few empirical investigations of association between reported emotional experiences and the tendency to respond in a socially desirable manner". Now, several decades later, there are still few studies focused on the effect of impression management degree on personal emotions.

Self-conscious emotions arise from people's inferences about other's evaluation of them (Leary, 2007). Because high impression management people often have many concerns about their public appearance and the consequence of their behaviour for their personal images (Buss, 1980; Carver & Scheier, 1985), it is expected that under certain circumstances, people with high impression management level experience stronger self-conscious emotions compared with people with low impression management level. In addition, it is proposed that this hypothesis is true only in public contexts (Facebook), because in most cases, one starts thinking about their images only when one knows their behaviour will be viewed and evaluated by others (Goffman, 1959; Leary, 1995; Baumeister, 1982). Moreover, because low impression management people do not care much about their public appearance or how their behaviour will be evaluated by others (Buss, 1980; Carver & Scheier, 1985), it is therefore expected that, for a similar event, low impression management people experience the same intensity of self-conscious emotion no matter whether their behaviour will, or will not be viewed or evaluated by others. Based on above arguments, the following hypothesis is proposed:

- *Hypothesis 3: Impression management level moderates the effect of social media on emotions, such that high impression management people experience stronger self-conscious emotions on Facebook compared to E-mail, whereas low impression management people do not differ in their emotional reactions to Facebook and E-mail.*



**Figure 1. Theoretical framework**

As shown in Figure 1, the present study suggested that messages spread on different types of social media are able to evoke different types of emotional responses, and the evoked emotions play different roles in guiding pro-environmental consumer behaviour. Emotion is considered as a mediating variable, which mediates the effects of social media on pro-environmental consumer behaviour. In addition, individual's impression management level is considered as the moderator in this approach, which moderates the effects of social media on user's emotions.

## 3.Experiments

### 3.1 Study 1

Study 1 was a scenario-based experiment that aimed to explore the effect of media channels on people's pro-environmental behavioural intentions (hypothesis 1). Additionally, it investigated the mediating effect of emotions (both self-conscious emotions as well as basic emotions) between media channels and people's pro-environmental behavioural intentions (Hypothesis 2). Moreover, study 1 aimed to explore whether people's impression management level has a moderating effect between media channels and emotions. It was proposed that people with high impression management level will experience stronger self-conscious emotions in a Facebook context compared to a E-mail context; whereas people with a low impression management level will experience the same intensity of emotions (basic as well as self-conscious emotions) on both Facebook and E-mail (Hypothesis 3).

#### 3.1.1 Methods of Study 1

##### (1) Participants and design

Recruited by E-mail request, 128 people voluntarily participated in Study 1. They were from different countries and are currently studying at different Dutch universities. After deleting participants who answered the manipulation questions incorrectly, and those who provided strange answers (willing to donate 500000 euro), 108 respondents were left for further data analysis. The sample comprised 36 males and 72 females, with a mean age of 26 years ( $SD=8.101$ ). Respondents were randomly assigned to one of three media conditions (Facebook ( $n=36$ ) versus E-mail ( $n=46$ ) versus newspaper/control condition ( $n=26$ )). Participants were requested to complete an online questionnaire.

##### (2) Procedure and variables

##### *Material and condition manipulation*

The first step of the experiment was the manipulation of media channels. The pro-environmental stimulus used in the current study was a donation request. The donation request was originally downloaded from the World Wildlife Foundation (WWF) website, and was additionally modified into Facebook, E-mail and Newspaper contexts. The donation request contains a short informational text with a picture describing the fact that polar bears in the North Pole were suffering due to

climate change, and that monetary denotations are needed to support polar bear research and protection projects (the detailed message is presented in Appendix 1).

- In the Facebook condition, participants were requested to read the donation request that started with: ‘imagine that the following donation request has automatically showed on your Facebook page advertisement part’.
- In the E-mail condition, participants were requested to read the donation request that started with: ‘imagine that the following donation request was sent to you by E-mail from WWF advertising department’.
- In the Newspaper condition, participants were requested to read the donation request that started with: ‘imagine that you have read the following donation request from a daily newspaper’.

### ***Dependent measures***

Three dependent variables were used for measuring respondents’ pro-environmental behavioural intentions: willingness to share (WTS), willingness to donate (WTD), and willingness donation amount (WDA)<sup>1</sup>. The reasons for using these variables include, (1) word-of-mouth and pass-along behaviours are very important for marketers and policy makers to spread a message effectively (willingness to share). (2) willingness to donate and willingness donation amount are the most relevant behavioural reactions toward a donation request.

WTS and WTD were measured with three separate items, including likely, probable, and possible (MacKenzie, Lutz & Belch 1986). Participants were requested to indicate ‘How likely/probable/possible would you like to tell your friends about this donation request?’ and ‘How likely/probable/possible would you like to make monetary donations for helping polar bears?’ on 7-points Likert Scales, ranging from 1= “Very unlikely/very improbable/very impossible” to 7= “Very likely/very probable/very possible”.

Factor analysis showed that there was one factor of WTS (KMO=0.771,  $p<.01$ ). The factor (Eigenvalue=2.696) explained 89.869% of the variance and formed a reliability scale (Cronbach’s  $\alpha= 0.943$ ). The average score of the three items was used as

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<sup>1</sup> Note: results of three dependent variables were very similar in most of the analysis. The present study will only present the results of the dependent variable ‘willingness to share’, because compared with other two dependent variables, one’s intention in sharing the message with others is best relevance to the ‘social media’ focus of the current study. The results on ‘willingness to donate’ and ‘willingness donation amount’ can be required from the author.

respondent's WTS score for further analysis (sum of 3 items divided by 3). Similarly, factor analysis showed that there was one factor of WTD ( $KMO=.705$ ,  $p<.01$ ). The factor (Eigenvalue=2.598) explained 85.609% of the variance and formed a reliable scale (Cronbach's  $\alpha=0.915$ ). The average of the three items was used as respondent's WTD score for further analysis.

For the third dependent variable, 'willingness donation amount (WDA)', participants were requested to indicate the amount of money (in euro) that they would like to donate in response to the donation request.

### ***Emotion intensity***

One's emotions can be measured in different ways. Some researchers believe that emotion should be measured by multiple variables (e.g., Diener, Smith & Fujita, 1995; Dunn & Schweitzer, 2005; Harth, Kessler & Leach, 2008; Mosher & White, 1981), while others believe that it is more accurate to measure an emotion with using a single item (e.g., De Hooge, Zeelenberg & Breugelmans, 2007). Because multiple emotions were included in the present experiment, each emotion was only measured with a single (instead of multiple) item. In total, the measure consisted of twelve emotions, including six basic emotions (happiness, sadness, anger, surprise, fear and disgust) and six self-conscious emotions (shame, guilt, embarrassment, gratitude and hubris). Respondents were requested to rate how strongly they felt each emotion after reading the donation request on 7-point Likert scales, ranging from 1= "Not at all" to 7= "extremely".

### ***Pro-environmental behaviour motives***

After the measuring of emotion intensity, respondents were presented with a list of ten possible pro-environmental behavioural intentions motives. Respondents were requested to indicate for each motive to what degree it plays a role in their decision-making on 7-points Likert scales, ranging from 1= "Not at all" to 7= "Very strong". Because the items were correlated, a Factor Analysis with Direct Oblimin rotation was conducted. The analysis showed a clear two factors solution (Table 1), with  $KMO=.811$ ,  $p<.001$ .

Six items were loaded onto Factor 1 (eigenvalue= 4.839). The factor explained 48.388% of the variance and formed a reliable scale (Cronbach's  $\alpha=.883$ ). Because all these six items were related to people's pro-environmental behavioural intentions motivated by their own beliefs, Factor 1 was labelled as "Own thought". Four items were loaded onto Factor 2 (eigenvalue= 4.839). The factor explained 17.585% of the variance and

formed a reliable scale (Cronbach's  $\alpha=.787$ ). Because all items in Factor 2 were related to people's behavioural intentions that were motivated by others opinions, Factor 2 was labelled as "Others thought". The average score of items in each factor was used for further analysis.

**Table 1, Items and Factor loadings of pro-environmental behavioural motives of Study 1**

Component	Factor 1	Factor 2
	Own thought	Others thought
I am a person who has concerns to wildlife animals or global environment.	.904	
I want to become a person who has concerns to wildlife animals or global environment.	.816	
I believe everyone should contribute to helping wildlife animals or improving global environment.	.800	
I love polar bears or the North Pole, I want to do something good to them.	.782	
I want to become a person who has ever made contributions to wildlife animals or global environment.	.736	
I talk a lot wildlife-related or global environment-related topics with my friends.	.647	
My friends think I should have more concerns to wildlife animals.		.894
I want my friends value me highly by make contributions to wildlife animals.		.881
I want my friends to know that I have concerns to wildlife animals or global environment.		.733
Many of my friends think everybody should be responsible to wildlife animals or to the global environment.	.441	.450
Eigenvalues	4.839	1.758
Percentage of total variance	48.388%	17.585%
Reliability	0.883	0.787
Number of test measures	6	4

### ***Impression management level***

Different scales were developed in measuring individual's self-impression management degrees. These scales are not identical, but they all share some similarities. The seven-items scale developed by Fenigstein et al. (1975) was applied to the current study in measuring respondents' impression management level. The scale was developed to assess the degree to which people focus on the public, observable aspects of themselves, known as public-consciousness scales. It was chosen for this study mainly because the scale consists of shorter items (7 items), and each item perfectly fits to the context of the study. In order to be comparable to other scales used in the current study, the 5-points scales used by previous researchers were all adapted into 7-points scales, ranging from 1= "extremely uncharacteristic of me" to 7= "extremely characteristic of me".

Factor analysis showed there only is one factor for all seven items (KMO=0.817,  $p<.001$ ). The factor (Eigenvalue=3.809) explained 54.420% of the variance and

formed a reliable scale (Cronbach's  $\alpha=0.871$ ). Each participant's impression management level was calculated (sum of 7 items divided by 7), and according to the mean level (3.947), participants were divided into two groups. Respondents who scored lower than 3.947 were categorized as low impression management people (45 respondents). Those who scored higher than 3.947 were categorized as high impression management people (63 respondents).

### ***Importance of using media***

Participants were requested to answer a multiple-choice question "What media channel do you use the most for receiving new information?" They had a choice of eight media types (i.e., Twitter, Facebook; E-mail; YouTube; Newspaper; TV news; Book; Magazine). Then, participants were requested to answer a set of questions regarding their media usage habits, including 'Please indicate how important Facebook/E-mail/Newspaper is to you for receiving new information?' and 'Please indicate how important update Facebook status is to you?' Answering scales were 7-point Likert scales, ranging from 1= "Not at all" to 7= "Very much"<sup>2</sup>.

In Facebook condition, according to the average score (3.67) of answers to "importance of Facebook to you", participants were classified into two groups ( $N^{\text{low}}=17$ ;  $N^{\text{high}}=19$ ). In addition, according to the average score (1.54) of answers in "importance of updates of Facebook to you", participants were also classified into two groups ( $N^{\text{low}}=23$ ;  $N^{\text{high}}=12$ ). In E-mail condition, according to the average score (5.43) of answers in "importance of E-mail to you", participants were classified into two groups ( $N^{\text{low}}=18$ ;  $N^{\text{high}}=28$ ). In Newspaper condition, according to the average score (4.27) of answers in "importance of Newspaper to you", participants were classified into two groups ( $N^{\text{low}}=6$ ;  $N^{\text{high}}=20$ ).

### ***General information collection***

Respondents were asked to indicate their gender, age and nationality<sup>3</sup>.

### ***Manipulation check***

To check whether the manipulation of media channels worked as expected, at the end of the survey, participants were requested to answer the manipulation question 'Please recall from which media channel did you receive the donation request?' Possible

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<sup>2</sup> Note: Because the analysis of 'importance of using social media' were not relevant to the main content of the study, analysis results were not presented in the result part of the current study.

<sup>3</sup> Note: The nationality was not included into the analysis because the sampling sizes of respondents in each country were too small.

answers included Facebook, E-mail, newspaper or do not know (Onwezen, 2014). In order to increase the precision of the research results, participants who provided incorrect answers were deleted from further analysis (deleted 10 respondents from Facebook condition, 2 respondents from E-mail condition, and 8 respondents from Newspaper condition). There were 108 respondents remaining for data analysis.

After completing all of the tasks participants were thanked.

### **3.1.2 Results of Study 1**

#### **(1) Media channels**

##### ***Effect of media channels on behavioural intention***

It was expected that readers have stronger pro-environmental behavioural intentions after read the message provided via Facebook compared with via E-mail (hypothesis 1). To test this hypothesis, a one-way ANOVA was conducted with willingness to share (WTS) as dependent variable. Independent variables were media channel (Facebook; E-mail; Newspaper).

One-way ANOVA showed that the main effect of media channel on respondents' willingness to share was significant,  $F(2, 105)=3.162, p=.046$ . LSD post hoc analysis additionally indicated that, in the Newspaper condition ( $M=2.58, SD=1.562$ ), respondents' WTS was significantly higher than those in E-mail condition ( $M=1.74, SD=1.070$ ),  $p=.014$ , and marginally higher than those in Facebook condition ( $M=1.96, SD=1.070$ ),  $p=.084$ . However, the difference of WTS between two social media conditions was not significant,  $p=.463$ .

##### ***Effect of media channels on emotions***

To investigate the effects of a pro-environmental message on people's anticipated emotions when it was provided via different media channels (hypothesis 2a), a one-way MANOVA was performed with media type as the factor. Dependent variables were a range of emotions, including six basic emotions (happiness, sadness, surprise, anger, fear and disgust) and six self-conscious emotions (pride, shame, guilt, embarrassment, gratitude and hubris).

Media channel did not have significant impacts on most of people experienced emotions (all  $F$ 's  $\leq 1.610$ , all  $ps > .05$ ). The results showed that only respondents' experienced shame ( $F(2, 105)=3.747; p=.027$ ), guilt ( $F(2, 105)=2.436; p=.092$ ) and



embarrassment ( $F(2, 105) = 4.117$ ;  $p = .019$ ) have significant differences between media conditions (Table 2). The post hoc LSD analysis additionally showed that, respondents in newspaper ( $p = .011$ ) and Facebook conditions ( $p = .072$ ) had marginally significant higher score on shame compared with those in E-mail condition. The score on shame does not differ significantly between Newspaper and Facebook conditions ( $p = .364$ ). For guilt, respondents in the newspaper condition had a higher score compared with those in E-mail conditions ( $p = .031$ ). But people in Facebook condition did not experienced significantly different level of guilt compared with those in the E-mail ( $p = .260$ ) and Newspaper conditions ( $p = .270$ ). For embarrassment, respondents in the newspaper condition reported a (marginally) significantly higher score compared with those in the Facebook condition ( $p = .073$ ) and in the E-mail condition  $p = .005$ . However there were no significant differences between two social media conditions ( $p = .288$ ).

In general, above results indicated that people in Newspaper condition experienced stronger negative self-conscious emotions compared with those in the Facebook or E-mail conditions.

**Table 2, Descriptive statistics of emotions intensities, Mean (Standard Deviation)**

	Shame	Guilt	Embarrassment
<b>Facebook</b>	2.78 (2.044)	2.94 (1.926)	2.33 (1.882)
<b>E-mail</b>	2.07(1.340)	2.52 (1.378)	1.93 (1.323)
<b>Newspaper</b>	3.19 (2.000)	3.42 (1.793)	3.12 (1.925)

## (2) Emotion

### *Effects of emotions on pro-environmental behavioural intention*

To investigate the ability of different emotions in motivating people's pro-environmental behavioural intention (hypothesis 2b), a hierarchical multiple regression was performed with willingness to share as dependent variable. Independent variables were twelve emotions, including six basic emotions (happiness, sadness, surprise, anger, fear and disgust) and six self-conscious emotions (pride, shame, guilt, embarrassment, gratitude and hubris).

Six self-conscious emotions were entered in the first block of the hierarchical multiple regression model. The model was marginally significant ( $F(6,101) = 1.851$ ,  $p = .097$ ), and explained the variance in WTS was approximately 9.9%. After six basic emotions

have been included in model 2, the model as a whole significantly explained approximately 25.1% of the variance in WTS ( $F(12,95)=2.647, p=.004$ ). It indicated that the introduction of six basic emotion explained additional 15.1% of the variance,  $R^2\text{Change}=0.151$ ;  $F\text{ Change}(6,95)=3.201, p=.007$ . Coefficients table additionally showed that, happiness ( $\beta=.263; p=.037$ ) and sadness ( $\beta=.264; p=.038$ ) have significant positive impacts on people's WTS, such that that the more respondents experienced happiness and sadness, the more they were willing to share the donation request with others. The effect of other emotions were all insignificant (all  $\beta's \leq (-).138$ , all  $ps > .05$ )<sup>4</sup>.

***Mediating effect of emotion on the relationship between media channel and behavioural intention***

It was expected that the effect of the donation request (provided on different media channels) in motivating people's pro-environmental behavioural intention occur due to people's experienced emotions (hypothesis 2c). To test this assumption, a hierarchical regression analysis was performed with willingness to share as dependent variable. Independent variables were included in three blocks. Demographic variables (age, gender) were included in Block 1, manipulation of information channel were included in Block 2 as dummy variables, and twelve emotions were included in Block 3.

As Table 3 shows, both gender ( $\beta=.008, p=.935$ ) and age ( $\beta=-.081, p=.417$ ) do not have significant effects to the model. In the second block, the created dummy variable Newspaper has a significant impact to the model ( $\beta=.271, p=.011$ ), such that compared to those in E-mail condition, people in Newspaper condition were more willing to share the donation request with others. After included twelve emotions into the model, the third block showed that, only sadness ( $\beta=.261, p=.040$ ) has significant impact to the model, indicating that the more people experienced sadness, the more they were willing to share the message with other people. The hierarchal regression indicated that the effect of media channels on people's WTS was not occurring due to their experienced emotions.

**Table 3, Hierarchical regression analysis of the effects of emotions between media channels and willingness to share in Study 1**

<sup>4</sup> When firstly introduce basic emotions into block 1 and self-conscious emotions into block 2, the results showed that the introduction of self-conscious emotions only (insignificantly) explained additional 3.6% of the variance in willingness to share  $R^2\text{Change}=0.036$ ;  $F\text{ Change}(6,95)=0.752, p=.609$ .

	<b>Independent variables</b>	<b><math>\beta</math></b>	<b><math>t</math>-value</b>	<b><math>F(df1, df2); p</math>-value; <math>R^2</math></b>
Block 1	(Constant)		5.198***	$F(2, 105)=0.335; p=.716;$ $R^2=.006$
	Gender	.008	.081	
	Age	-.081	-.814	
Block 2	(Constant)		4.799***	$F(4, 103)=1.873; p=.121;$ $R^2=.068$
	Gender	.013	.135	
	Age	-.108	-1.099	
	Dummy Newspaper	.271	2.599*	
Block 3	Dummy Facebook	.093	.885	$F(16, 91)=2.526; p=.003;$ $R^2=.308$
	(Constant)		1.081	
	Gender	.021	.222	
	Age	-.118	-1.250	
	Dummy Newspaper	.263	2.544*	
	Dummy Facebook	.120	1.213	
	Happiness	.204	1.632	
	Sadness	.261	2.086*	
	Anger	.152	1.133	
	Surprise	.051	.476	
	Fear	.126	1.047	
	Disgust	-.064	-.517	
	Pride	.130	.898	
	Shame	-.098	-.614	
	Guilt	.043	.299	
	Embarrassment	-.195	-1.237	
	Gratitude	-.020	-.150	
	Hubris	-.088	-.738	

Note: Gender (1=male, 0=female); Dummy Newspaper (1=Newspaper, 0=Facebook and E-mail); Dummy Facebook (1=Facebook; 0=E-mail and Newspaper); \*\*\* $p<0.001$ ; \*\* $p<0.01$ ; \* $p<0.05$ ; † $p<0.10$ .

### (3) Impression management

#### *Moderating effect of impression management on the relationship between media channel and emotions*

To test the moderating effect of impression management level on the relationship between media channels and people's experienced emotions (hypothesis 3), a two-way ANOVA was conducted with twelve emotions as dependent variables. Independent variables were impression management level (high, low) and media channel (Facebook, E-mail and newspaper).

Although media channel has a (marginally) significant main effect on people's experienced shame, ( $F(2, 102)=3.562, p=.032$ ), guilt ( $F(2, 102)=2.414, p=.095$ ) and embarrassment ( $F(2, 102)=3.731, p=.027$ ), the main effect of impression management level, as well as the interaction effect of media channel with impression management level on people's experienced emotions were all not significant, all  $F$ 's  $\leq 2.703$ , all  $p$ 's  $> .05$ .

#### *Moderating effect of impression management on the relationship between media channel and behavioural intention*

Impression management level does not show a moderating effect between media

channel and emotions. An additional analysis was performed to investigate whether one's impression management level moderates the effect of media channel on their pro-environmental behavioural intention. It was expected such that high impression management people have stronger behavioural intention when reading the donation request via Facebook than via E-mail, whereas low impression management people do not differ their behavioural intention on different media channels. To test this hypothesis, a two-way ANOVA was conducted with willingness to share as dependent variable. Independent variables were media channel (Facebook, E-mail, Newspaper) and impression management level (high, low).

The two-way ANOVA indicated that the main effect of media channel, the main effect of impression management level, as well as the interaction effect of media with impression management level on people's willingness to share were all not significant, all  $F's \leq 2.280$ , all  $ps > .05$ .

#### **(4) Pro-environmental behavioural motives**

##### ***Interaction effect of media channel and impression management on behavioural motives***

Although the variable of behavioural motive was not included in the prior hypotheses, it was expected that people's impression management level has a joint effect with the message they saw on their pro-environmental behavioural motives. To test this assumption, a two-way MANOVA was performed with two aspects of possible donation motives as dependent variables ("Own thought"; "Others thought"). Media channels (Facebook, E-mail, Newspaper) and respondent's impression management level (high, low) were included as independent variables.

The main effect of impression management level on 'own thought' motives was significant,  $F(1, 102)=4.394$ ,  $p=.039$ , such that compared with low impression management people ( $M=3.026$ ,  $SD=1.584$ ), high impression management people's willingness to share were more driven by their 'Own thought' ( $M=3.669$ ,  $SD=1.622$ ). Surprisingly, the main effect of impression management level on people's 'Others thought' motives was not significant ( $F(1, 102)=0.751$ ,  $p=.388$ ).

The main effect of media channel, as well as the two-way interaction effect of media channel with impression management level on both types of behavioural motives were not significant, all  $F(2, 102) \leq 3.013$ , all  $ps > .050$ .

### ***Mediating effect of emotion on the relationship between media channel and pro-environmental motives***

It was assumed that emotion has a mediating effect between media channel and people's pro-environmental behavioural motives. To test this assumption, two hierarchical regression analyses were performed with two types of motives as dependent variables ('own thought', 'others thought'). Independent variables were included in three blocks. Demographic variables (age, gender) were included in Block 1, dummy variables of media channels were included in Block 2, and twelve emotions were included in Block 3 (Table 4).

For donation motives 'Own thought', gender has a marginally significant effect to the model ( $\beta = -.176$ ,  $p = .075$ ), such that female respondents' WTS intention were more driven by their 'Own thought' compared to male respondents ( $M^{\text{female}} = 3.616$ ,  $SD = 1.531$ ;  $M^{\text{male}} = 2.972$ ,  $SD = 1.757$ ). Block 2 indicated that there was no main effect of media channel on 'Own thought' motives (all  $\beta$ 's  $\leq .147$ , all  $p$ 's  $> .05$ ). In addition, block 3 showed that only happiness ( $\beta = .307$ ,  $p = .013$ ) and surprise ( $\beta = -.227$ ,  $p = .031$ ) have significant impacts to the model. The effects of other emotions to the model were all not significant (all  $\beta$ 's  $\leq (-).175$ , all  $p$ 's  $> .05$ ).

For 'Others thought' motives, age has a marginally significant impact to the model ( $\beta = -.169$ ,  $p = .088$ ), such that the younger the respondents, the more their WTS intention was driven by 'Others thought'. Block 2 indicated that media channel does not have significant impact on 'Others thought' motives (all  $\beta$ 's  $\leq .096$ , all  $p$ 's  $> .05$ ). In addition, Block 3 showed that only happiness ( $\beta = .379$ ,  $p = .001$ ), surprise ( $\beta = -.185$ ,  $p = .061$ ) and pride ( $\beta = .250$ ,  $p = .060$ ) have (marginally) significant impacts to the model, such that the more people experienced happiness and pride, or the less they experienced surprise, the more their WTS was motivated by 'Others thought' motive.

In general, the hierarchical regression indicated that emotions do not play a mediating role between manipulations of media channel on either of people's pro-environmental behavioural motives.

**Table 4, Hierarchical regression analysis of the effect of emotions between media channels and pro-environmental behavioural motives in Study 1**

		Own thought			Others thought		
		$\beta$	$t$ -value	$F(df1, df2); p$ -value; $R^2$	$\beta$	$t$ -value	$F(df1, df2); p$ -value; $R^2$
1	(Constant)		3.195**			6.595***	
	Gender	.176	1.798†	$F(2, 105) = 2.081$ ; $p = .130$ ; $R^2 = .038$	.085	.863	$F(2, 105) = 1.629$ ; $p = .201$ ; $R^2 = .030$
	Age	-.058	-.590		-.169	-1.724†	
2	(Constant)		3.057**	$F(4, 103) = 1.735$ ;		6.248***	$F(4, 103) = 1.029$ ;

	Gender	.167	1.710†	$p=.148; R^2=.063$	.089	.896	$p=.396; R^2=.038$
	Age	-.083	-.845		-.182	-1.827†	
	Dummy Newspaper	.147	1.400		.096	.907	
	Dummy Facebook	.145	1.381		.065	.613	
3	(Constant)		.637			2.730**	
	Gender	.159	1.745†		-.017	-.194	
	Age	-.062	-.672		-.191	-2.216*	
	Dummy Newspaper	.049	.485		.000	-.008	
	Dummy Facebook	.113	1.175		.072	.796	
	Happiness	.307	2.529*		.379	3.332**	
	Sadness	.175	1.445		-.028	-.248	
	Anger	.109	.836	$F(16, 91)=3.039;$ $p<.001; R^2=.348$	.035	.290	$F(16, 91)=4.238;$ $p<.001; R^2=.427$
	Surprise	-.227	-2.189*		-.185	-1.896†	
	Fear	.013	.111		.109	.996	
	Disgust	.049	.402		.004	.033	
	Pride	.136	.969		.250	1.902†	
	Shame	.085	.550		-.159	-1.097	
	Guilt	.159	1.139		.142	1.081	
	Embarrassment	-.110	-.719		.202	1.414	
	Gratitude	.062	.471		-.048	-.387	
	Hubris	-.093	-.803		.055	.503	

Note: Gender (Male=1, Female=0); Dummy Newspaper (1=Newspaper, 0=Facebook and E-mail); Dummy Facebook (1=Facebook; 0=E-mail and Newspaper); \*\*\* $p<0.001$ ; \*\* $p<0.01$ ; \* $p<0.05$ ; † $p<0.10$

### ***Effect of pro-environmental behavioural motives on behavioural intention***

To test which type of behavioural motives can better stimulates people's pro-environmental behavioural intention, a multiple liner regression was performed with willingness to share as dependent variable. Independent variables were 'Own thought' and 'Others thought' motives.

The multiple regression model was significant ( $F(2, 105)=7.300, p=.001$ ), and explained the variable in WTS was approximately 12.2% ( $R^2=.122$ ). The coefficient table additionally showed that while 'Others thought' motive did not has significant effect to the model ( $\beta=.093, p=.381$ ), the impact of 'Own thought' was significant ( $\beta=.292, p=.007$ ), indicating that the more people driven by 'Own thought' motives, the more they were willing to share the message with other people.

### **3.1.3 Discussion of Study 1**

It was proposed that people have different levels of pro-environmental behavioural intentions when they read the same donation request from different *social media*

channels. However, Study 1 showed unexpected results. While the function of social media channels (i.e., Facebook and E-mail) in motivating people's pro-environmental behavioural intention did not show significant difference, the traditional media channel of Newspaper showed a superior ability in motivating people's willingness to share the donation request with others. Moreover, it was found that people experienced much stronger negative self-conscious emotions (i.e., shame, guilt and embarrassment) when reading the donation request from the Newspaper rather than from Facebook and E-mail.

Although a donation request published in a daily Newspaper made people experience stronger negative self-conscious emotions and was more able to motivate people's willingness to share, negative self-conscious emotions were not proven to be the certain causes of making Newspaper a superior media channel in motivating readers' pro-environmental behavioural intention. In other words, the effects of media channel on readers' pro-environmental behavioural intention were not due to emotions. Furthermore, it was expected that people's impression management level moderate the effect of media channel on their experienced emotions. However, the findings of Study 1 did not fully support this proposition. It seems that when reading a same donation request, emotion intensities of high impression management people did not differ from low impression management people. Furthermore, high and low impression management people have similar pro-environmental behavioural intention after reading a same donation request.

In summary, Study 1 showed a surprising finding that traditional media channel Newspaper is more able to motivate people's pro-environmental behavioural intention compared with social media channels (Facebook and E-mail). What remains unclear is why this phenomenon occurs. Among all possible explanations, it is proposed that reader's perception of the interruption level of the message plays a role.

People often use Facebook and E-mail to keep in touch/contact with those in their social networks. It seems reasonable to assume that people mainly intend to receive messages from people they know, and receive updates/information from sources that they are familiar with. Therefore, an unexpected donation request maybe considered as an interruption to Facebook and E-mail users. Interrupted by an unexpected message (a donation request), and especially when the topic is not particularly entertaining, people may be annoyed or feel bothered by it. Possibly they are less likely to react to it, or even read the message. Compared to Facebook and E-mail, because the factual contents of recent events published in a daily Newspaper is usually accompanied by advertisements and nonfactual materials,

(WorldHistorySources, 2014), people expect to receive/read different types of messages from a daily Newspaper. They are less likely to be annoyed and bothered by a donation request, or consider it as an interruption to their information searching. Therefore, it was expected that people would feel more open to react to a donation request they saw in a daily Newspaper.

To test this hypothesis, study 2 is designed with a new factor “interruption level of the message” in addition to three media conditions. It was expected that when the donation request is provided to people with a high interruption level, people in the Facebook and E-mail conditions will have less pro-environmental behavioural intention compared with those in the Newspaper condition. When the donation request is provided to readers with low interruption level, people’s pro-environmental behavioural intention will be similar among all three media channels.



## 3.2 Study 2

Study 2 was a scenario-based experiment that aimed to replicate the findings of Study 1. Study 1 has shown that people have different levels of pro-environmental behavioural intention when receiving the donation request from different media channels. Thus when receiving the donation request from traditional media channel Newspaper, people were more motivated to behave pro-environmentally compared with those who received the same message from different social media channels (e.g., Facebook or via E-mail). Based on this finding, Study 2 proposed that the impact of media channels on people's pro-environmental behavioural intention was mainly due to people's perception of whether the message has interrupted their information searching activities. Furthermore, it was proposed that, people's reactions to the same donation request are dependent on the information channel that they presents it and the interruption level. People's impressions of a donation request will additionally affect how people react to it. So that when people do not perceive the donation request as an interruption, they will think more positively about it and be more motivated to behave pro-environmentally. Conversely, when people perceive it as an interruption, they will have more negative impressions about it and be less motivated to behave pro-environmentally.

### 3.2.1 Methods Study 2

#### (1) Participants and design

Recruited by E-mail request and paper-pencil survey request, 255 participants voluntarily participated in the experiment. They were from different countries and are currently studying at Dutch universities or working at Dutch research agencies. The sample comprised 90 males and 165 females, with a mean age of 27 years old ( $SD=10.55$ ). The study was a 3(Media: Facebook, E-mail, Newspaper)\*2 (Interruption: High, low) between-subject design. Participants were randomly assigned to one of the six conditions: Facebook-High ( $n=62$ ); Facebook-Low ( $n=25$ ); E-mail-High ( $n=40$ ), E-mail-Low ( $n=26$ ); Newspaper-High ( $n=69$ ); and Newspaper-Low condition ( $n=33$ ). The participants were asked to complete a short questionnaire.

#### (2) Procedure and variables

##### *Material and condition manipulation*

The first step of the experiment was the manipulation of media channels. The pro-environmental stimulus used in the current study was a donation request, and it was slightly different from the one used in Study 1. The donation request was downloaded from the World Wildlife Foundation (WWF) website and then modified into Facebook, E-mail and newspaper contexts. It contains a short informational text with a picture describing the fact that polar bears in the North Pole were suffering due to climate change, and monetary donations are needed to support polar bear research and protection projects (the detailed message is presented in Appendix 2).

- In the high interruption condition, participants were requested to read the donation request starting with ‘Please imagine that you have some free time and would like to search for ideas on **what you can do this Saturday evening**. While browsing through your Facebook page/E-mail inbox/ daily newspaper to look for nice things to do, you suddenly see a donation request published by World Wildlife Fund!’
- In the low interruption condition, participants were requested to read the donation request starting with ‘Please imagine that you have some free time and would like to search for ideas on **what you can do to help protecting wildlife animals or improving global environment**. While browsing through your Facebook page/E-mail inbox/ daily newspaper to look for nice things to do, you suddenly see a donation request posted by World Wildlife Fund!’

### *Dependent measures*

Dependent variables of Study 2 were willingness to share (WTS), willingness to donate (WTD), willingness donation amount (WDA)<sup>5</sup>. The measures of these variables were identical to those of Study 1.

Factor analysis showed that there was one factor of WTS (KMO=.691,  $p<.01$ ). The factor (Eigenvalue=2.527) explained 84.220% of the variance and formed a reliable scale (Cronbach’s  $\alpha= 0.902$ ). The average score of the three items was used as respondent’s WTS for further analysis (sum of 3 items divided by 3). Similarly, factor analysis showed that there was one factor of WTD (KMO=.730,  $p<.01$ ). The factor (Eigenvalue=2.565) explained 85.516% of the variance and formed a reliable scale

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<sup>5</sup> Note: results of three dependent variables were very similar in most of the analysis. The present study will only present the results of the dependent variable ‘willingness to share’, because compared with other two dependent variables, one’s intention in sharing the message with others is best relevance to the ‘social media’ focus of the current study. The results on ‘willingness to donate’ and ‘willingness donation amount’ can be required from the author.

(Cronbach's  $\alpha = 0.911$ ). The average of the three items was used as respondent's WTD for further analysis.

### *Emotion intensity*

Then, participants were requested to self-report their emotion intensities. The type of emotions included, and the measure of emotion intensity in the current study were identical to those of Study 1.

### *Pro-environmental behavioural motives*

Following the emotion intensity measures, respondents were presented with a list of eight possible motives underlying why they would like to behave pro-environmentally. Respondents were requested to indicate for every motives to what degree it plays a role in their decisions on 7-points Likert scales, ranging from 1= "Not at all" to 7= "Very strong". The items used in Study 2 were specifically developed to measure people's 'altruistic' (pro-environmental behavioural intentions driven by willingness to create a favourable impression in other people's minds) and 'egocentric' (pro-environmental behavioural intentions driven by true willingness of helping others) motives. Because items were correlated, a Factor Analysis with Direct Oblimin rotation was conducted (Table 5). The analysis showed a clear two factors solution (KMO=.848,  $p < .001$ ).

The first factor, altruistic motives (Eigenvalue=3.924), explained 49.049% of the variance and formed a reliable scale (Cronbach's  $\alpha = .801$ ). The second factor, egocentric motives (Eigenvalue=1.284), explained 16.044% of the variance and also formed a reliable scale (Cronbach's  $\alpha = .795$ ). Because the behavioural intentions motivate one's expectation of a pleasurable feeling it is considered as an egocentric motive, and therefore the fifth item was included in the "egocentric" factor.

**Table 5, Items and Factor loadings of pro-environmental behavioural motives of Study 2**

Components	Altruistic	Egocentric
I want to contribute to protecting wildlife animals and improving global environment.	.899	
I believe everyone should be responsible for helping wildlife animals or improving global environment.	.879	
I love polar bears or the North Pole, I want to do something good to them.	.698	
I discuss a lot wildlife animal protection or global environment improvement-related topics with my friends.	.639	
Make donation to help polar bears is a pleasure for me, I feel glad by doing so.	.506	.441

Make donation to help polar bears will make people around me value me highly.		.927
Make donation to help polar make me feel good when talking about this with other people.		.767
Make donation to help polar bears make me feel self-worth.		.705
Eigenvalues	3.924	1.284
Percentage of total variance	49.049	16.044
Reliability	0.801	0.795
Number of test measures	4	4

### ***Impression management level***

Subsequently, participants were requested to self-report their impression management level. The measures of the current study are identical to those of Study 1.

Factor analysis showed that there was one factor for all seven items ( $KMO=0.784$ ,  $p<.001$ ). The factor (Eigenvalue=3.541) explained 50.582% of the variance and formed a reliable scale (Cronbach's  $\alpha=0.831$ ). Average impression management scores of each participant were calculated (average of 7 items). According to the mean score (3.987), participants were divided into two groups. Respondents who scored lower than 3.987 were categorized as low impression management people (120 respondents) and those who scored higher than 3.987 were categorized as high impression management people (135 respondents).

### ***Media message impression***

Then, respondents were presented with a list of fourteen possible impressions that they may have on the donation request they saw from media channels.

Respondents were requested to indicate for each possible impression to what extent they agree or disagree on the 7-points Likert scale, ranging from 1= "Not at all" to 7= "Very strong". Because items were correlated, a Factor Analysis with Direct Oblimin rotation was conducted (Table 6). The analysis yielded a five-factor solution ( $KMO=.748$ ,  $p<.001$ ). Seven items that loaded onto the first factor were all related to people's impression of the trustworthiness of the message. It was therefore labelled 'trustworthiness'. The factor (Eigenvalue=3.623) explained 25.882% of the variance and formed a reliable scale (Cronbach's  $\alpha=.808$ ). Two items that loaded onto the second factor were both related to people's positive impressions of the message (Pearson  $r=.296$ ,  $p<.001$ ). It was therefore labelled 'positive'. Two items that loaded onto the third factor were both related to people's negative impression of the message

(Pearson  $r=.166$ ,  $p=.008$ ). It was therefore labelled ‘negative’. Only one item was loaded onto the fourth factor. It was labelled ‘popularity’. Two items that loaded onto the fifth factor were both related to people’s thought that the message interrupted their information searching or invades their privacy (Pearson  $r=.298$ ,  $p<.001$ ). Therefore the factor was labelled ‘interruption’.

The matrix table showed that the loadings of the last three factors were complexly mixed. The reasons item ‘interrupted my information search’ was included into the fifth factor, and item ‘is negative’ is included into the third factor were because these items correlated more with other items in the corresponding factors.

**Table 6, Items and Factor loadings of message impressions of Study 2**

Component	Trustworthiness	Positive	Negative	Popularity	Interruption
Is accurate	.815				
Is believable	.808				
Is professional	.699				
Is factual	.650				
Is favourable to people	.645			-.541	
Is concerned about the community's well-being	.595				
Is published on a trustworthy channel	.546				
Information is reported in depth		.822			
Is positive		.715			
Is concerned about making profits			.768		
Is negative			.484	.582	
Is being popularly discussed				.606	
Interrupted my information search			.615		.415
Invades people's privacy					.831
Eigenvalues	3.623	1.626	1.373	1.090	1.006
Percentage of total variance	25.882%	11.612%	9.810%	7.784%	7.189%
Cronbach's $\alpha$	0.808				
Pearson $r$		.296	.166		.298
Number of test measures	7	2	2	1	2

### ***General information collection***

Participants were requested to indicate their gender, age and nationality<sup>6</sup>.

### ***Manipulation check***

To check whether the manipulation of media channels worked as expected, at the end of the survey, participants were requested to answer two manipulation questions: (1) ‘Please recall from which media channel did you receive the donation request message?’ Possible answers included ‘Facebook’, ‘E-mail’, ‘Newspaper’ and ‘I do

<sup>6</sup> Note: The nationality was not included into the analysis because the sampling sizes of respondents in each country were too small.

not know' (Onwezen, 2014). (2) 'Please recall the initial motivation for browsing media was to?' Possible answers included 'searching for ideas on what I can do this Saturday evening', 'Searching for ideas on what I can do to help protecting wildlife animals or improving global environment', and 'I do not know'.

In order to increase the precision of the experiment, respondents who answered the manipulation questions incorrectly were deleted from further analysis (Deleted 17 respondents in Facebook-High condition; 24 respondents in Facebook-Low condition; 19 respondents in E-mail-High condition; 33 respondents in E-mail-Low condition; 25 respondents in Newspaper-High condition; 29 respondents in Newspaper-Low condition).

After completing all of the tasks participants were thanked.

### **3.2.2 Results of Study 2**

#### **(1) Media channels**

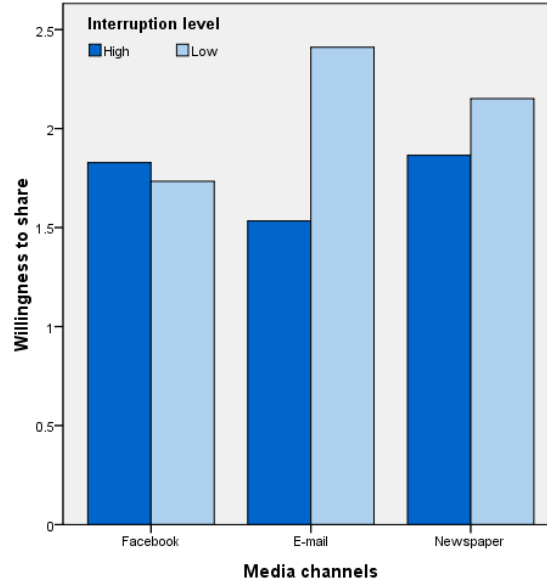
##### *Effect of media channels and interruption levels on behavioural intention*

It was expected that people's pro-environmental behavioural intentions in responding to the same donation request they receive from different media channels was mainly due to their perceptions of the message interruption level (hypothesis 1). To test this hypothesis, a two-way ANOVA was conducted with willingness to share as dependent variable. Independent variables were media channel and manipulation of message interruption level.

The two-way ANOVA showed that, the main effect of interruption level on people's WTS was significant,  $F(1, 249)=5.238, p=.023$ , such that people in low interruption condition were more willing to share the message ( $M=2.11, SD=1.363$ ) compared with those in high interruption condition ( $M=1.77, SD=1.044$ ). However, the main effect of media channel on WTS was not significant,  $F(1, 249)=0.844, p=.431$ .

Furthermore, there was a marginally significant two-way interaction effect between message interruption level and media channel on people's WTS,  $F(2, 249)=3.001, p=.052$ . The simple interaction effect analysis additionally showed that, interruption level has a significant main effect in E-mail condition,  $F(1, 254)=9.03, p=.003$ , such that compared with those who does not considered the donation request as an interruption ( $M=2.41, SD=1.581$ ), people who believed that it has interrupted their information searching were less willing to share it with others ( $M=1.53, SD=0.939$ ).

Interruption level of the message do not have significant main effect in the Facebook ( $F(1, 254)=0.1, p=.911$ ) and the Newspaper condition ( $F(1, 254)=.95, p=.331$ ) (Figure 2).



Figures 2, Effects of media channel and interruption level on willingness to share

### *Effect of media and interruption level on emotions*

To investigate people's anticipated emotions towards a donation request (provided via different media channels and with interruption level) (hypothesis 2a), a two-way MANOVA was performed with media channel (Facebook, E-mail, Newspaper) and interruption level (high, low) as factors, and with twelve emotions as dependent variables.

Among twelve emotions, interruption level only yields a significant main effect on sadness,  $F(1, 247)=5.266, p=.023$ , such that when people did not perceive the donation request as an interruption, they experienced stronger sadness ( $M=4.44, SD=1.603$ ) compared with those who did ( $M=3.88, SD=1.375$ ).

Media channel yields a (marginally) significant main effect on people's anticipated sadness ( $F(2, 247)=2.494, p=.085$ ), shame ( $F(2, 247)=5.250, p<.01$ ), guilt ( $F(2, 247)=3.962, p=.020$ ), and embarrassment ( $F(2, 247)=3.644, p=.028$ ). The LSD analysis additionally showed that people in Facebook condition experienced (marginally) significantly less sadness, shame, guilt and embarrassment compared with those in Email and Newspaper conditions (Table 7). However, the impacts of these four emotions between E-mail and Newspaper conditions did not have

significant differences (all  $p > .05$ ).

**Table 7, Descriptive statistics and significances of emotions among media conditions, Mean (Standard Deviation)**

	<b>E-mail</b>	<b>Facebook</b>	<b>Newspaper</b>
<b>Sadness</b>	4.23 (1.761)	3.70 (0.788)	4.27 (1.580)
	$p = .056$		$p = .022$
<b>Shame</b>	3.08 (1.948)	2.28 (1.699)	2.89 (1.702)
	$p < .01$		$p = .018$
<b>Guilt</b>	3.23 (1.752)	2.56 (1.793)	2.96 (1.581)
	$p = .016$		$p = .104$
<b>Embarrassment</b>	2.52 (1.782)	1.94 (1.400)	2.33 (1.491)
	$p = .023$		$p = .089$

In addition, interruption level and media channel showed a significant interaction effect on people's experienced guilt,  $F(2, 247) = 3.427$ ,  $p = .034$ . The simple interaction effect analysis additionally showed that, in Newspaper condition, interruption level has a significant effect on people's experienced guilt,  $F(1, 254) = 6.78$ ,  $p = .010$ , such that when Newspaper readers did not consider the donation request as an interruption, they experienced stronger guilt ( $M = 4.62$ ,  $SD = 1.338$ ) compared with those who did ( $M = 4.10$ ,  $SD = 1.664$ ). However, the effect of interruption level on people's experienced guilt was not significant in both Facebook ( $F(1, 254) = .23$ ,  $p = .634$ ) and E-mail conditions ( $F(1, 254) = .06$ ,  $p = .804$ ).

## **(2) Emotion**

### ***Effects of emotions on pro-environmental behavioural intention***

To investigate the role of emotions in motivating participants' pro-environmental behaviour (hypothesis 2b), a hierarchical multiple regression analysis was performed with willingness to share as dependent variable. Independent variables were twelve emotions, including six basic emotions (happiness, sadness, surprise, anger, fear and disgust) and six self-conscious emotions (pride, shame, guilt, embarrassment, gratitude and hubris).

Six self-conscious emotions were entered in the first block of the hierarchical multiple regression. The model was statistically significant ( $F(6, 246) = 9.491$ ,  $p < .001$ ) and explained the variance in WTS was approximately 18.8%. After six basic emotions were included in model 2, the model as a whole was still statistically significant ( $F(12, 240) = 5.890$ ,  $p < .001$ ), and the introduction of six basic emotion explained additional 4% of the variance in respondents' willingness to share ( $R^2 \text{Change} = 0.40$ ;  $F$



*Change* (6,240)=2.046,  $p=.060^7$ ). Furthermore, the results showed that, gratitude ( $\beta=.237$ ;  $p<.01$ ) and sadness ( $\beta=.180$ ;  $p=.036$ ) have significant positive effects to people's WTS, such that the more respondents experienced gratitude and sadness, the more they were willing to share the donation request with others.

***Mediating effect of emotion on the relationship of media channel and pro-environmental behavioural intention***

It was expected that the effect of a donation request (provide on different media channels and with different interruption levels) on people's pro-environmental behavioural intentions were occur due to their experienced emotions (hypothesis 2c). To test this assumption, a hierarchical regression analysis was performed with willingness to share as dependent variable. Independent variables were included into four blocks. Demographic variables (age, gender) were included in Block 1, manipulation of media channels were included in Block 2 (dummy variables), the manipulation of interruption level were included in Block 3, and twelve emotions were included in Block 4.

Results from the hierarchical regression analysis showed that (Table 8), while gender does not has significant impact to the model ( $\beta=.065$ ,  $p=.316$ ), respondents' age has a significant impact on their WTS ( $\beta=-.158$ ,  $p=.016$ ), such that the younger the respondents, the more they were willing to share the donation request with others. The second block showed that there was no main effect of manipulation of media channels on respondents' WTS (all  $\beta's \leq (-).067$ , all  $ps > .05$ ). However the effect of manipulation of interruption level was significant to the model ( $\beta=-.139$ ,  $p=.027$ ), indicating that compared with those in high interruption level condition, people in low interruption condition were significantly more willing to share the donation request message with others.

After include twelve emotions to the model, while the effect of interruption level becomes insignificant (from  $\beta=-.139$ ,  $p=.027$  to  $\beta=-.085$ ;  $p=.143$ ). The result indicated emotions mediate the effect of interruption level of the message on people's willingness to share. A detailed look at the block 4 showed that, the mediating effects of emotion were mainly due to gratitude ( $\beta=.327$ ,  $p<.001$ ) and sadness ( $\beta=.150$ ,  $p=.086$ ), such that the more people experienced gratitude and sadness, the more they were willing to share the donation request with others.

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<sup>7</sup> When firstly introduce six basic emotions into block 1 and then six self-conscious emotions into block 2, the results indicated that the introduction of self-conscious emotions only significantly explained additional 7.6% of the variance in WTS,  $R^2\text{Change}=0.076$ ;  $F\text{ Change}$  (6,240)=3.931,  $p=.001$

**Table 8, Hierarchical regression analysis of the mediating effect of emotions in Study 2**

		$\beta$	<i>t</i> -value	<i>F</i> ( <i>df1</i> , <i>df2</i> ); <i>p</i> -value; <i>R</i> <sup>2</sup>
1	(Constant)		11.382***	
	Age	-.158	-2.426*	<i>F</i> (2, 250)=3.002; <i>p</i> =.051; <i>R</i> <sup>2</sup> =.023
	Gender	.065	1.006	
2	(Constant)		10.571***	
	Age	-.162	-2.483*	<i>F</i> (4, 248)=1.782; <i>p</i> =.133; <i>R</i> <sup>2</sup> =.028
	Gender	.065	.996	
	Dummy Facebook	-.073	-1.047	
	Dummy E-mail	-.045	-.647	
3	(Constant)		10.663***	
	Age	-.156	-2.412*	<i>F</i> (5, 247)=2.435; <i>p</i> =.035; <i>R</i> <sup>2</sup> =.047
	Gender	.065	1.012	
	Dummy Facebook	-.067	-.972	
	Dummy E-mail	-.054	-.790	
	Interruption	-.139	-2.221*	
4	(Constant)		3.832***	
	Age	-.121	-2.009*	
	Gender	.120	2.000*	
	Dummy Facebook	-.005	-.083	
	Dummy E-mail	-.039	-.605	
	Interruption	-.085	-1.468	
	Happiness	-.002	-.029	
	Sadness	.150	1.722†	
	Anger	.126	1.417	<i>F</i> (17, 235)=4.745; <i>p</i> <.001; <i>R</i> <sup>2</sup> =.256
	Surprise	.072	1.059	
	Fear	.056	.684	
	Disgust	-.115	-1.482	
	Pride	-.056	-.789	
	Shame	.076	.649	
	Guilt	.070	.603	
	Embarrassment	-.067	-.743	
	Gratitude	.327	4.413***	
	Hubris	-.087	-1.050	

Note: Gender (Male=1, Female=0); Dummy Newspaper (1=Newspaper, 0=Facebook and E-mail); Dummy E-mail (1=E-mail; 0=Facebook and Newspaper); Interruption (1=high, 0=low)\*\*\**p*<0.001; \*\**p*<0.01; \**p*<0.05; †*p*<0.10

### (3) Impression management

#### *Moderating effect of impression management on the relationship between media channel and emotions*

It was expected that people's impression management level moderates the effect of media channels on their experienced emotions, such that high impression management people experienced stronger self-conscious emotions on Facebook compared to E-mail, whereas low impression management people do not differ their experienced emotions when reading a donation request from different media channels (hypothesis 3). To test this assumption, a three-way MANOVA was performed with

twelve emotions as dependent variables. Independent variables were media channel (Facebook, E-mail, Newspaper), interruption level (high, low) and impression management level (high, low).

Interruption level of the donation request showed a significant main effect on people's experienced sadness,  $F(1, 241)=4.884, p=.028$ , such that in general, people in low interruption condition experienced stronger sadness compared with those in high interruption condition. The effect of interruption level on other eleven emotions were all not significant, all  $F's(1, 241) \leq 1.574$ , all  $ps > .05$ .

Media channel has a significant main effect on people's experienced shame ( $F(2, 241)=4.168, p=.017$ ), guilt ( $F(2, 241)=3.154, p=.044$ ), and embarrassment ( $F(2, 241)=3.072, p=.048$ ), such that people in the Facebook condition experienced stronger shame, guilt and embarrassment compared with those in Email and Newspaper conditions. The effect of media type on other emotions were not significant, all  $F's(1, 241) \leq 1.969$ , all  $ps > .05$ .

As Table 9 shows, respondents' impression management level has a significant main effect on their experienced happiness ( $F(1, 241)=5.200, p=.023$ ), anger ( $F(1, 241)=4.236, p=.041$ ), surprise ( $F(1, 241)=4.430, p=.036$ ), fear ( $F(1, 241)=3.354, p=.068$ ), pride ( $F(1, 241)=5.985, p=.015$ ), shame ( $F(1, 241)=5.427, p=.021$ ), guilt ( $F(1, 241)=4.501, p=.035$ ), embarrassment ( $F(2, 241)=4.668, p=.032$ ), and hubris ( $F(1, 241)=5.876, p=.016$ ), such that high impression management people experienced stronger anger, surprise, fear, pride, shame, guilt, embarrassment and hubris compared with low impression management people. Among twelve emotions, impression management level only has no significant impacts on people's experienced sadness, disgust and gratitude, all  $F's(1, 241) \leq 2.358, p > .05$ .

There was a significant two-way interaction effect of media channel and impression management level on people's anticipated sadness ( $F(2, 241)=2.709, p=.069$ ), anger ( $F(2, 241)=6.907, p=.001$ ), fear ( $F(1, 241)=2.948, p=.054$ ), and disgust ( $F(1, 241)=4.563, p=.011$ ). The simple interaction effect analysis additionally showed that, impression management level only has significant impact in Facebook condition, such that when receiving the donation request via Facebook, high impression management people experienced stronger sadness ( $F(1, 254)=10.92, p=.001$ ), anger ( $F(1, 254)=14.43, p<.001$ ), fear ( $F(1, 254)=10.71, p=.001$ ) and disgust ( $F(1, 254)=6.77, p=.010$ ) compared with low impression management people.

There were no significant two-way interaction effect between interruption level of the message and impression management level on people's anticipated emotions, all

$F$ 's(2, 241)  $\leq 1.777$ , all  $p$ 's  $> .05$ . The three-way interaction effect between interruption level, media type and impression management level on people's anticipated emotions were also not significant, all  $F$ 's(2, 241)  $\leq 1.578$ , all  $p$ 's  $> .05$ .

**Table 9, Descriptive statistics for impression management, Mean (Standard Deviation)**

	Facebook		E-mail		Newspaper	
	Low IML	High IML	Low IML	High IML	Low IML	High IML
Happiness	1.25 (0.565)	1.76 (0.998)	1.38 (0.824)	1.60 (0.885)	1.35 (0.640)	1.36 (0.778)
Sadness	3.19 (1.818)	4.34 (1.512)	4.17 (1.834)	4.26 (1.740)	4.30 (1.590)	4.24 (1.587)
Anger	2.31 (1.600)	3.71 (1.859)	3.21 (1.532)	3.12 (1.903)	3.13 (1.821)	2.98 (1.569)
Surprise	1.52 (1.185)	1.82 (1.111)	1.29 (0.690)	1.86 (1.336)	1.50 (1.027)	1.67 (1.001)
Fear	1.63 (1.214)	2.68 (1.629)	2.08 (1.501)	2.36 (1.859)	2.52 (1.574)	2.58 (1.536)
Disgust	2.04 (1.398)	3.00 (1.903)	2.67 (1.857)	2.64 (1.846)	2.52 (1.531)	2.33 (1.441)
Pride	1.27 (0.893)	1.71 (1.137)	1.17 (0.482)	1.43 (0.991)	1.26 (0.713)	1.38 (0.757)
Shame	1.94 (1.522)	2.71 (1.829)	2.79 (1.956)	3.24 (1.948)	2.50 (1.670)	3.22 (1.674)
Guilt	2.10 (1.666)	3.13 (1.803)	3.12 (1.801)	3.29 (1.743)	2.63 (1.540)	3.24 (1.575)
Embarrassment	1.54 (1.091)	2.45 (1.589)	2.25 (1.482)	2.67 (1.934)	2.13 (1.455)	2.49 (1.514)
Gratitude	1.44 (1.201)	1.79 (1.189)	1.67 (1.274)	1.57 (1.063)	1.57 (1.148)	1.71 (1.257)
Hubris	1.31 (0.803)	1.76 (1.149)	1.33 (0.761)	1.55 (1.087)	1.33 (0.701)	1.62 (1.063)

### ***Moderating effect of impression management on the relationship between media channel and behavioural intention***

An additional analysis was performed to investigate whether one's impression management level moderates the effect of media channel and message interruption level on their pro-environmental behavioural intention. A three-way ANOVA was conducted with willingness to share as dependent variables. Independent variables were media channel (Facebook, E-mail, Newspaper), interruption level (high, low), and impression management level (high, low).

Interruption level of the message has a significant main effect on people's WTS,  $F(1, 243)=4.871$ ,  $p=.028$ , such that people in low interruption condition were more willing to share the donation request with others compared with those in high interruption condition. The main effect of media channel on people's WTS was not significant,  $F(2, 243)=0.494$ ,  $p=.611$ , such that people's WTS level were similar among different media conditions.

Respondents' impression management level has a significant main effect on their WTS,  $F(1, 243)=4.064$ ,  $p=.045$ , such that high impression management people were more willing to share the message with others ( $M=2.02$ ,  $SD=1.217$ ) compared with low impression management people ( $M=1.73$ ,  $SD=1.092$ ).

There was a two-way interaction effect between interruption level and media channel on WTS ( $F(2, 243)=2.645$ ,  $p=.073$ ). The simple interaction effect analysis additionally indicated that the effect of interruption level on people's WTS was only significant in E-mail condition,  $F(1, 254)=9.03$ ,  $p=.003$ , such that people were more

willing to share the donation request with others when they did not think it as an interruption ( $M=2.41$ ,  $SD=1.581$ ), compared with those who did ( $M=1.53$ ,  $SD=0.939$ ).

The two-way interaction effect between other variables, as well as the three-way interaction effect between interruption, social media and impression management level on people's WTS were all not significant,  $F(2, 243)=0.321$ ,  $p=.726$ .

#### **(4) Pro-environmental behavioural motives**

##### ***Effect of media channel, interruption level and impression management on behavioural motives***

Although the variable of behavioural motive was not included in the prior hypotheses, it was expected that people's impression management level have a joint effect with the message people saw (from different media channels with different interruption levels) on their altruistic (behaviour driven by their willingness to create a favourable impression in other people's minds) and egocentric (behaviour driven by their true willingness for helping others) pro-environmental behavioural motives. To test this assumption, a three-way MANOVA test was performed with two aspects of possible pro-environmental behavioural motives as dependent variables (egocentric, altruistic). Independent variables were media channel (Facebook, E-mail, Newspaper), message interruption level (high, low) and respondent's impression management level (high, low).

Interruption level has a marginally significant main effect on people's altruistic motives,  $F(1, 241)=3.635$ ,  $p=.058$ , such that compared with those in high interruption condition, ( $M=3.46$ ,  $SD=1.478$ ), in low interruption condition ( $M=3.85$ ,  $SD=1.537$ ), people's WTS were more motivated by their altruistic considerations. The main effect of interruption level on egocentric motives was not significant,  $F(1, 241)=1.455$ ,  $p=.229$ .

The main effect of media channel on respondent's both altruistic and egocentric pro-environmental behavioural motives were not significant, all  $F(1, 241) \leq .964$ ,  $ps > .050$ .

Respondents' impression management level has significant main effects on both altruistic ( $F(1, 241)=4.796$ ,  $p=.029$ ) and egocentric motives ( $F(1, 241)=14.164$ ,  $p<.001$ ), such that high impression management people have stronger altruistic ( $M=3.83$ ,  $SD=1.485$ ) as well as egocentric ( $M=2.49$ ,  $SD=1.245$ ) behavioural motives than low impression management people ( $M^{\text{Altruistic}}=3.33$ ,  $SD=1.490$ ;  $M^{\text{Egocentric}}=1.87$ ,

$SD=.0979$ ).

In addition, there were two-way interaction effects between media channel and impression management level on altruistic ( $F(2, 241)=2.918, p=.056$ ) and egocentric motives ( $F(2, 241)=2.442, p=.089$ ). For altruistic motives, the simple interaction effect analysis showed that, in Facebook condition ( $F(1, 252)=10.03, p=.002$ ), the altruistic motives of high impression management people ( $M=3.97, SD=1.368$ ) were stronger compared with low impression management people ( $M=2.99, SD=1.459$ ). For egocentric motives, people's impression management level has effect on all three media conditions (Facebook  $F(1, 253)=12.87, p<.01$ ; E-mail  $F(1, 253)=6.24, p=.013$ ; Newspaper  $F(1, 253)=3.13, p=.078$ ), such that among all media conditions, the egocentric motives of high impression management people ( $M^{\text{Facebook}}=2.64, SD=1.224$ ;  $M^{\text{E-mail}}=2.60, SD=1.376$ ;  $M^{\text{Newspaper}}=2.31, SD=1.153$ ) were significantly stronger compared with low impression management people ( $M^{\text{Facebook}}=1.77, SD=1.001$ ;  $M^{\text{E-mail}}=1.93, SD=0.889$ ;  $M^{\text{Newspaper}}=1.95, SD=1.009$ ).

The two-way interaction effects of other factors as well as the three-way interaction effect do not have significant impacts on both types of pro-environmental behavioural motives, all  $F$ 's  $\leq 1.692, p>.050$ .

#### ***Mediating effect of emotion on the relationship between pro-environmental message and behavioural motives***

It was assumed that the effect of the donation request provided via different media channels and with different interruption level on readers' pro-environmental behavioural motives were mediated by their experienced emotions. To test this assumption, two hierarchical regression analyses were performed with egocentric and altruistic pro-environmental motives as dependent variables. Independent variables were included in four blocks. Demographic variables (age, gender) were included in Block 1, the manipulation of media channels were included in Block 2 (dummy variables), the manipulation of interruption levels were included in Block 3, and twelve emotions were included in Block 4 (Table 10).

For altruistic motives, the hierarchical regression analysis showed that, gender ( $\beta=-.116, p=.074$ ) has a marginally significant effect on people's donation motivations, such that female respondents have a stronger altruistic behavioural motive compared to male respondents. The impact of age was marginally significant effect to the model ( $\beta=-.123, p=.059$ ), such that the younger the respondents, the stronger altruistic motives they have. The impacts of media channel and interruption

level on respondents' altruistic motives were not significant. Block 4 showed that sadness ( $\beta=.301$ ,  $p<.001$ ), disgust ( $\beta=.127$ ,  $p=.071$ ), and gratitude ( $\beta=.134$ ,  $p=.042$ ) have (marginally) significant impacts to the model.

For egocentric motives, hierarchical regression analysis showed that, age has a significant impact to the model ( $\beta=-.215$ ,  $p=.001$ ), such that the younger the respondents, the more their pro-environmental behaviour were motivated by their egocentric considerations. Both media channel and interruption level do not have significant impacts on respondents' egocentric motives. In addition, Block 4 showed that people's feeling of sadness ( $\beta=.162$ ,  $p=.044$ ) and guilt ( $\beta=.292$ ,  $p=.007$ ) have positively effects on their egocentric motives.

Nevertheless, the hierarchical regression did not support the assumption that people's experienced emotion mediated the effect of pro-environmental message on their altruistic or egocentric pro-environmental behavioural motives.

**Table 10, Hierarchical regression analysis of the mediating effect of emotions on the relationship between donation requests and pro-environmental behavioural motives**

	Altruistic motives		$F(df1, df2);$ $p$ -value; $R^2$	Egocentric motives		$F(df1, df2);$ $p$ -value; $R^2$
	$\beta$	$t$ -value		$\beta$	$t$ -value	
1	(Constant)	16.150			14.260	
	Gender	-.116	-1.797†	-.024	-.381	$F(2, 249)=6.519;$ $p=.002; R^2=.050$
	Age	-.123	-1.901†	-.215	-3.354**	
2	(Constant)	14.447			12.544	
	Gender	-.118	-1.821†	-.025	-.387	$F(4, 247)=3.499;$ $p=.008; R^2=.054$
	Age	-.121	-1.866†	-.213	-3.297**	
	DummyFB	-.076	-1.098	-.023	-.338	
	DummyEM	.066	.952	.049	.712	
3	(Constant)	13.910			12.020	
	Gender	-.118	-1.834†	-.025	-.386	
	Age	-.117	-1.805†	-.210	-3.254**	$F(5, 246)=3.123;$ $p=.009; R^2=.060$
	DummyFB	-.072	-1.052	-.020	-.292	
	DummyEM	.058	.836	.043	.627	
	Interruption	-.099	-1.584	-.078	-1.258	
4	(Constant)	4.893			3.333	
	Gender	-.048	-.878	.046	.837	
	Age	-.077	-1.411	-.165	-2.962**	
	DummyFB	-.010	-.165	.048	.804	
	DummyEM	.053	.913	.031	.528	
	Interruption	-.022	-.421	-.017	-.321	$F(17, 234)=8.026;$ $p<.001; R^2=.368$
	Happiness	.059	.954	.093	1.461	
	Sadness	.301	3.833***	.162	2.022*	
	Anger	.099	1.233	.052	.637	
	Surprise	-.080	-1.288	.047	.749	
	Fear	.091	1.228	.068	.904	
	Disgust	.127	1.813†	-.038	-.529	
	Pride	.032	.499	.005	.073	

Shame	-.161	-1.526	-.017	-.158
Guilt	.150	1.427	.292	2.722**
Embarrassment	.107	1.302	.050	.592
Gratitude	.134	2.048*	.053	.781
Hubris	-.111	-1.496	.016	.215

Note: Gender (1=male; 0=female); interruption (1=high; 0=low); DummyFB (1=Facebook, 0= E-mail and Newspaper); DummyEM (1=E-mail; 0=Facebook and Newspaper); \*\*\* $p<0.001$ ; \*\* $p<0.01$ ; \* $p<0.05$ ; † $p<0.10$

### *Effect of pro-environmental behavioural motives on behavioural intention*

To test whether people's altruistic and egocentric motives have impact on their pro-environmental behavioural intentions, a multiple linear regression was performed with willingness to share as dependent variable, and with two types of pro-environmental motives (altruistic, egocentric) as independent variables.

As Table 11 shows, the multiple regression indicated that the model was significant,  $F(2, 250)=25.481$ ,  $p<.001$ , and explained the variable in WTS was approximately 16.9% ( $R^2=.169$ ). The coefficients table additionally showed that both respondent's altruistic as well as egocentric motives have significant positive impacts to the model, such that the more altruistic ( $\beta=.281$ ,  $p<.001$ ) and egocentric ( $\beta=.180$ ,  $p=.011$ ) motives people have, the more they were willing to share the message with others. Moreover, it was shown that people's altruistic motives have stronger impacts to their WTS compared with their egocentric motives.

**Table 11, Multiple Linear Regression analyses of the effect of pro-environmental behavioural motives on behavioural intentions**

Donation motivations		$\beta$	$t$ -value	$F(df1, df2)$ ; $p$ -value; $R^2$
<b>Willingness to share</b>	Altruistic	0.281	3.991***	$F(2, 250)=25.481$ ; $p<.001$ ; $R^2=.169$
	Egocentric	0.180	2.562*	

### **(5) Message impression**

Although the variable of message impression was not included in the prior hypotheses, it was expected that the effect of interruption condition of the message on people's pro-environmental behavioural intentions were due to people's impressions on the message.

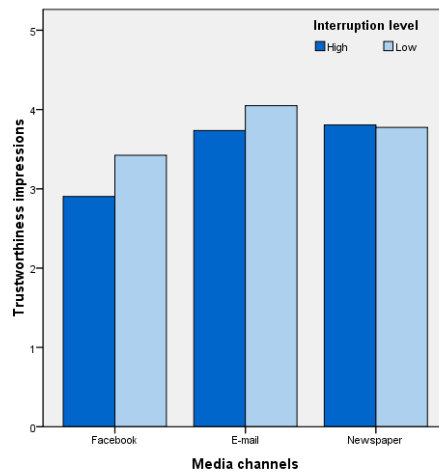
### *Effect of media channel and interruption level on message impressions*

It was expected that people form different impressions to the same message they saw



on different media channels and with different interruption levels. To test this assumption, a two-way ANOVA analysis was performed with trustworthiness impression as dependent variables. Independent variables were media channel (Facebook, E-mail, Newspaper) and interruption level (high, low). Because the reliability level of other four message impression factors (i.e., positive impression, negative impression, interruption impression, and popularity impression) was very low, only trustworthiness was used as dependent variable in the current analysis.

The two-way ANOVA showed that, interruption level of the message has a significant main effect on people's trustworthiness impression,  $F(1, 249)=4.086$ ,  $p=.044$ , such that people in low interruption condition think the donation request more trustworthy ( $M=3.75$ ,  $SD=1.056$ ) compared with those in high interruption condition ( $M=3.45$ ,  $SD=1.033$ ). The main effect of media channel on people's trustworthiness impression was also significant,  $F(2, 249)=11.539$ ,  $p<.001$ . A detailed look at the LSD table indicated that people in Facebook condition ( $M=3.04$ ,  $SD=1.045$ ) thought the donation request was less trustworthy compared with those in the E-mail ( $M=3.84$ ,  $SD=1.005$ ) ( $p<.001$ ) and Newspaper conditions ( $M=3.80$ ,  $SD=0.917$ ) ( $p<.001$ ). However, the interaction effect of interruption and media channel on people's trustworthiness impression of the message was not significant,  $F(2, 249)=1.621$ ,  $p=.200$ .



**Figures 3, Effects of media channels and interruption levels on trustworthiness impressions**

### *Effect of message impression on pro-environmental behavioural intention*

It was proposed that the people's perceived message impressions have significant effect on their pro-environmental behavioural intention. To test this assumption, a

simple liner regression was performed with willingness to share as dependent variable. Independent variable was trustworthiness message impression.

The regression equation was significant ( $F(1, 253)=39.869, p<.001, R^2=.136$ ). Coefficients table additionally showed that, trustworthiness ( $\beta=.369, p<.001$ ) has a significant impact on people's WTS, such that the more trustworthiness impression people have to the donation request, the more they were willing to share it with others.

### ***Mediating effect of message impression***

It was expected that the effect of a donation request (provide on different media channels and with different interruption level) on people's pro-environmental behavioural intention was mediated by their perceived message impressions. To test this assumption, a hierarchical regression analysis was performed with willingness to share as dependent variable. Independent variables were included in four blocks. Demographic variables (age, gender) were included in Block 1, dummy variables of media channels were included in Block 2, the manipulation of interruption levels were included in Block 3, and trustworthiness message impressions was included in Block 4.

As Table 12 shows, age has a significant effect on people's WTS ( $\beta=-.165, p=.012$ ), such that the younger the respondents, the more they were willing to share the donation request with others. Although the impacts of media channel on respondents' WTS were not significant (all  $\beta \leq (-).073$ , all  $ps > .05$ ), interruption level has a significant effect to the model ( $\beta=-.130, p=.037$ ), such that compared with those in high interruption condition, people in low interruption condition significantly more willing to share the donation request message with others.

After including trustworthiness message impression to the model, the effect of interruption level becomes insignificant (from  $\beta=-.130, p=.037$  to  $\beta=-.089, p=.127$ ), indicating that the effect of the interruption level of the message on respondents' willingness to share was mediated by trustworthiness impression of the message. A detailed look at block 4 showed that, trustworthiness message impression has a positive impact to the model ( $\beta=.382, p<.001$ ), such that the more trustworthy people thought of the message, the more they were willing to share it with others.

**Table 12, Hierarchical regression analysis of the mediating effect of message impression**

	<b>Independent variables</b>	<b><math>\beta</math></b>	<b><math>t</math>-value</b>	<b><math>F(df1, df2); p</math>-value; <math>R^2</math></b>
Block 1	(Constant)	-.065	7.079***	$F(2, 252)=3.281; p=.039;$ $R^2=.025$
	Gender	-.165	-1.011	

	Age		-2.542*	
Block 2	(Constant)	-.066	7.072***	
	Gender	-.169	-1.011	
	Age	-.073	-2.598*	$F(4, 250)=1.926; p=.107;$
	DummyFB	-.043	-1.063	$R^2=.030$
	DummyEM		-.620	
Block 3	(Constant)	-.066	7.418***	
	Gender	-.166	-1.027	
	Age	-.068	-2.564*	$F(5, 249)=2.439; p=.035;$
	DummyFB	-.051	-.997	$R^2=.047$
	DummyEM	-.130	-.743	
	Interruption		-2.095*	
Block 4	(Constant)	-.072	2.644**	
	Gender	-.143	-1.204	
	Age	.060	-2.366*	$F(6, 248)=8.600; p<.001$
	DummyFB	-.057	.893	$R^2=.172$
	DummyEM	-.089	-.883	
	Interruption	.382	-1.531	
	Trustworthiness	-.065	6.133***	

Note: Gender (1=male, 0=female); Interruption (1=high, 0=low); DummyFB (1=Facebook, 0= E-mail and Newspaper); DummyEM (1=E-mail; 0=Facebook and Newspaper); \*\*\* $p<0.001$ ; \*\* $p<0.01$ ; \* $p<0.05$ ; † $p<0.10$

### 3.2.3 Discussion of Study 2

Unlike the findings of Study 1, Study 2 showed that people have similar level of willingness to share among all three media conditions. Nevertheless, Study 2 showed the important finding that the interruption level of a pro-environmental message does affect readers' reactions to it, and has an impact on a people's intention to share the message with others. When a donation request was provided to people in a low interruption manner, readers were inclined to have more trustworthiness impressions to the message, and had a stronger willingness to share it with others. Especially, the donation request is considered more trustworthy by readers when it was presented to them via E-mail or published by Newspaper rather than via Facebook.

The findings show that emotion does play a mediating role between the interruption level of the message and people's pro-environmental behavioural intention. The mediating effect of emotions was mainly due to reader's sense of sadness and gratitude.

Contrasted with the results of Study 1, the current findings show that people's impression management level moderates the effect of the pro-environmental message on their experienced emotions. When reading the message via Facebook, high impression management people experienced stronger negative basic emotions such as sadness, anger, fear and disgust compared with low impression management people. As well, it has been found that high impression management people were generally more willing to share the donation request with others compared with low impression

management people.

Study 2 indicated that both altruistic and egocentric pro-environmental behavioural motives are able to contribute to people's intention to share the message with others. In addition, the findings of Study 2 showed that, no matter which media channel, the egocentric pro-environmental behavioural motives of high impression management people were much higher than low impression management people. However, high impression management people's altruistic motives were higher than low impression management people only in the context of Facebook.

## 4. General Discussion

Environmental quality strongly depends on human behaviour patterns, and environmental problems can only be solved by the promotion of people's pro-environmental behaviour (Steg & Vlek, 2009; De Groot & Steg, 2010). To encourage a specific pro-environmental behaviour, it is important to know which intervention strategy is most effective under which circumstance for a particular group of people. Because social media are used more and more often by marketers and policy makers for the spreading of pro-environmental messages in today's Internet era, the present study focused on investigating the function of media channel in motivating people's pro-environmental behaviour. In addition, the current study aimed to explore the psychological mechanisms that underlying this effect. These include such effects as one's impression management level on emotional responses, and the role of emotion in stimulating people's pro-environmental behavioural intentions through social media.

It was expected that the public media channel Facebook motivates more pro-environmental behaviours compared to the private media channel E-mail (hypothesis 1). However, this expectation was not proven by the experiments. In Study 1, it was found that no matter how the donation request was provided, i.e., via a publically visible (Facebook) or a private (E-mail) social media channel, people's intention in sharing the message do not have much difference. The traditional media Newspaper at the meantime showed superior ability in motivating people's willingness to share the message with others.

However, this finding was not found in Study 2. Study 2 showed that, information channels do not have significant differences in motivating people's behavioural intention. The different results of two studies indicated that, if not considering the interruption level of a message, one can falsely assume that different media channels have different functions in motivating people's pro-environmental behavioural intention. When also consider the effect of message interruption level, it was found that, interruption level of a donation request is very important within an E-mail context. With regard to the message sent via E-mail, people are more motivated to behave pro-environmentally when it in a low interruption level rather than high interruption level.

Although it was expected that people would experience stronger self-conscious emotions when in a publically visible environment where social influences play an

important role compared with a private context (hypothesis 2a), the current findings disapproved the hypothesis. Findings of the current study showed that, without considering interruption level, a donation request published in a Newspaper or sent via E-mail could better stimulate people's negative self-conscious emotions of shame, guilt and embarrassment. The possible explanation to this phenomenon is that, Newspaper has an even more superior "public" character than other media channels. Given the fact that traditional media has a longer history, Newspapers are read by larger populations. Thus, a Newspaper message seems more likely to make people evaluate themselves in the social context compare with other media channels, and make people experience stronger self-conscious emotions.

However, when also take interruption level of the message into consideration, a donation request published in a low interruption manner is more able to motivate readers' negative emotion of sadness compared with a high interruption message. The findings indicated that, when take interruption into account, the superior function of Newspaper in motivating people's negative self-conscious emotions disappeared. It is possible that readers have more focus on the interruption level of the message rather than media channels, so that when the donation request was provided to them with a low interruption level, people only generate strong sadness emotions toward the message.

Furthermore, although it was expected that self-conscious emotions motivate more pro-environmental behaviour compared to basic emotions (hypothesis 2b), the current study disapproved this hypothesis. The result indicated that, rather than other emotions, sadness is more able to motivate people's intention in sharing the message. To explain this finding, it is possible that, when using a polar bear donation request as the pro-environmental intention stimulus, rather than relating polar bear's decreasing living standards with the inconsiderate behaviours of human beings (including themselves), respondents' focus might only be the sad fact that polar bears are suffering from global warming. Hence, among the various emotions, the negative basic emotion sadness is more effective in motivating readers' intentions in sharing the message with others.

In addition, the findings of the current study were corresponding to previous research, and indicate that, people are more likely to pass-along messages that are able to stimulate strong emotional feelings (Dobele et al. 2007; Phelps, Lewis, Mobilio, Perry & Raman, 2004; Taylor et al., 2012). However, the statement that online messages that users find pleasant, rather than unpleasant, produce the strongest pass-along intentions towards a social media message (e.g., Eckler and Bolls 2011; Phelps et al.

2004; Lin & Peña, 2011) was not applicable to the current study content. The current study shows that, in some cases (e.g., a monetary donation request), the stronger negative emotions people have towards the message, the more they are willing to share it with others.

Findings of the first experiment disapproved the expectation that emotions have mediating effect on the relationship between social media and readers' pro-environmental behaviour (hypothesis 2c). It showed that the effects of media channels on people's pro-environmental behavioural intentions are not due to emotions. However, the second experiment showed that, when also taking interruption level of the message into account, people's experienced emotions do mediate the effect of the message on their behavioural intentions. The mediating effects of emotions were mainly due to a basic emotion (sadness) and a self-conscious emotion (gratitude). As discussed earlier, the findings imply that, although self-conscious emotions facilitate the attainment of a range of complex social goals (Tracy & Robins, 2004; Keltner & Buswell, 1997; Tracy & Robins, 2007), and drives people to behave in socially appropriate ways (Baumeister, Stillwell, & Heatherton, 1994; Leith & Baumeister, 1998; Leary & Tangney, 2012), in certain circumstances, basic emotion work better in stimulating one's pro-environmental behavioural intentions.

Besides the basic emotion of sadness, the findings show that gratitude also plays a role in mediating the pro-environmental message on people's pro-environmental behavioural intentions. The emotion of gratitude is conceptualized as a moral affect that is analogous to other moral emotions such as shame and guilt (McCullough, Kilpatrick, Emmons, Larson, 2001). It is a positive emotion a person feels when others intentionally give, or attempt to give, something of value (McCullough, Kilpatrick, Emmons & Larson, 2001; McCullough & Tsang, 2004). Gratitude is the greatest of virtues (Cicero, 1851). Besides its function in forcing people to maintain their reciprocity obligations to benefactors (Simmel, 1950; Gouldner, 1960), the emotion of gratitude also plays an important role in facilitating costly helping behaviours (Bartlett & DeSteno, 2006). The findings of the current study are corresponding to previous publications and shows that, gratitude has a motivational function, as it is able to guide a grateful person to behave in ways that would be beneficial to themselves, other individuals, and even to society at large (McCullough et al., 2001; Bartlett & DeSteno, 2006). However, the underlying reason of this finding is yet unknown. It is possible that when reading the donation request, respondents have gratitude emotions by comparing poplar bear's decreasing living

environment with theirs, so that they are motivated to behave pro-environmentally in helping polar bears.

The moderating effect of impression management level on the relationship between social media and emotions was not approved by Study 1 (hypothesis 3). However, findings of Study 2 imply that, when reading the donation request on Facebook, high impression management people experienced stronger negative basic emotions, i.e., sadness, anger, fear, and disgust compared with low impression management people. The self-conscious emotional intensities between high and low impression management people do not have significant difference. This finding was not same to the previous research, which demonstrated that because of higher concerns about the their appearance and the consequence of behaviour, high impression management people generally experience stronger self-conscious emotions in the public context (Buss, 1980; Carver & Scheier, 1985). Given the fact that there is little theoretical relevance that can be found, it is difficult to explain the underlying reason for the current finding. It is suggested that the association between one's impression management level with their emotional experience could be an interesting subject for future research. In addition, the findings imply that in general, high impression management people are more willing to share the donation request with others compared to low impression management people.

In addition to the above findings that are relevant to the original hypotheses, the current study imply that compared to having concerns about others opinions, people's own beliefs and true willingness in helping others work better in guiding them to behave pro-environmentally. Furthermore, it was shown that although people's intention in sharing the message with others is motivated by both their egocentric and altruistic pro-environmental behavioural motives, the impact of altruistic motives is stronger. Moreover, as expected, the self-reported pro-environmental behavioural motives (both egocentric and altruistic motives) of high impression management people are much higher than low impression management people. Especially it was shown that high impression management people's altruistic motives are better stimulated by a Facebook donation request. This result was correspondent to Baumeister's (1982) study, which demonstrated that, a wide range of social behaviour are, or can be determined or produced by the tendency of one's concerns of the consequences of their behaviour in the minds of others.

Furthermore, the current study shows that trustworthiness impressions to the donation request are very helpful in motivating people's pro-environmental behavioural intentions. People have more trustworthiness impression to a donation request when it



is provided to them in conditions of low interruption. Moreover, it has been found that a donation request is considered more trustworthy to readers when it was provided to them via E-mail or published in the Newspaper rather than via Facebook.

The current study also shows an interesting finding that young people are generally more motivated to behave pro-environmentally compared with older people. Moreover, it was found that females have stronger altruistic pro-environmental behavioural motives than males.

### **Practical implications and theoretical contributions**

Nowadays social media channels are used more and more often by marketers and advertisers (e.g., Solomon, 2006), the current study shows that, in some cases (e.g., for posting a donation request) the traditional media Newspaper works more effectively in motivating people's pro-environmental behaviour. In addition, the current findings provide valuable relevance regarding the importance of the message's interruption level on reader's potential reactions, and it enriches the empirical findings in the existing literatures. As such, when spreading a pro-environmental message on media channels, especially via E-mail, it is very important to make sure that the message will not be sent in a way that make people consider it as an interruption. A high interruption message will largely reduce people's pro-environmental behavioural intentions in reacting to it. These findings will provide a good understanding for commercial companies, political authorities and non-governmental organizations, and help them choice of the most effective media channel to post a message on, and help set up strategies in spreading the messages in a most effective manner.

As much attention has been paid to emotions in marketing and advertising (e.g., Dobeles, Lindgreen, Beverland, Vanhamme & Van Wijk, 2007; Eckler & Bolls, 2011), the current study enrich the empirical research, and it has implications regarding which emotions are most relevant for motivating people's pro-environmental behavioural intentions. The findings suggested that a monetary donation request is more able to motivates people's intention to share if it is designed in a way that can stimulate readers' negative emotion of sadness. Furthermore, the current findings imply that one's impression management level can affect their pro-environmental behaviour intentions, especially in a public visible context. This finding provides empirical relevance for organizations to make marketing communication and interventions strategies in motivating one's pro-environmental behaviours. For example, it is suggested that, a donation request works more effective in a publically

visible context, especially somewhere that may attract the attention of high impression management people.

The findings imply that younger people are more likely to respond to the monetary donation requests and they always have stronger pro-environmental behavioural intentions. This finding might be of interest to educators to know that it is important to educate people to behave pro-environmentally when they are younger age. Moreover, the study suggests that, pro-environmental messages can spread more often to media channels with young audiences (for example school websites).

In addition to empirical findings, the study enriches the existing literatures by providing empirical relevance on media channel related topics; pro-environmental behavioural intention related topics; and emotion related topics. In addition, the present study update the existing research on impression management level fields of studies, and provide empirical relevance on the moderating effect of one's impression management level on the relationship between media message on their experienced emotions, as well as behavioural reactions.

### **Limitations**

With regard to the experiment design, most of the respondents participated in the experiments by voluntarily fulfilling an online questionnaire. Although online sampling increases the generalizability of the study, possible covariance may affect the findings of the experiments. For example, it was unable to control environments that may distract respondent's attentions when filling online questionnaires. Because the experiments in the current study were both scenario-based experiments, the manipulation of media and interruption conditions did not work fully as expected for all participants. It is recommended that future research might also use different measurement methods, such as replicating experiments in real-life settings (field experiments) in order to manipulate the precision and rule out possible covariates. Moreover, the sample sizes of the experiments were relatively small. It is suggested that future studies could be conducted in laboratory settings with larger sampling sizes.

Furthermore, some of the scales applied for measuring independent variables were made up by the author (for example, the measurement of message impression in Study 2). These made up scales lacked theoretical relevance and some of them had low reliability. It is recommended that measurements could be improved or better developed in future studies.

With regard to dependent measures, the current studies focused on measuring one's

intentions to behave pro-environmentally. Although it was intended to measure the general distribution of people's intentions in different media conditions, it was possible that some participants gave a score number without carefully consideration. Moreover, one's intention for doing something may not necessarily lead to actual action (Vermeir & Verbeke, 2006). Future research might also explore whether these effects would also occur for real pro-environmental behaviours. For example, by replacing one's 'willingness to share', 'actual shared times' could be included as a dependent variable in future studies.

Because there were no existing scales for measuring one's pro-environmental self-impression concerns, the impression management level scale used in the current studies was originally designed to measure the degree to which people focus on the public and observable aspects of themselves (Fenigstein et al., 1975). However, one cannot ignore the fact that different people have different degrees of focus on what others think of them, so that they have different understanding and perception of the measurement items. This may makes the measuring scale unsuitable to the content of the current study. For example, the underlying meaning of the items 'I am concerned about my style of doing things' or 'I am concerned about the way I present myself' may make people who have 'pro-environmental' concerns think that these items regarding the degree to which others think of them as a pro-environmental person. By comparison for people who have 'wealthy and luxurious' concerns, they may perceive these items regarding the degree they care about their looks or dressing style. For both cases, people's self-reported impression management level will be high. Considering these concerns the scale used for measuring 'impression management level' may not be best suitable for the content of the current study. It is recommended that a more suitable measurement scale should be developed for future research, in order to make all respondents self-report only one aspect of their self-impression concern.

### **Future research directions**

The present research focused only on the effects of Facebook, E-mail and Newspaper. In future research, it might be interesting to explore the impacts of other media channels on people's pro-environmental behavioural intentions. Moreover, it might be interesting to explore what are other possible factors that make a type of media channel superior in motivating pro-environmental behavioural intentions than others.

The current study provides fundamental understanding of the role of emotions in mediating pro-environmental behavioural intentions towards media messages. As such, the association and relationships found in the current study can be applied to

real-life settings in future research, and to explore if these effects still make sense for motivating people's real pro-environmental behaviour.

Moreover, as the pro-environmental behavioural stimuli used in the current study was a donation request with negative fact content, it is suggested that other sorts of informational stimuli can be used in the future research, (for example, an advertisement for promoting organic foods). Further there is the possibility of exploring if the effects found in the current study also apply to messages with more positive content, or only apply to message with a negative content.

Given the fact that people's impression management level does affect their pro-environmental behaviour decision-making, another interesting field of research is how to manipulate readers' impression management level in the short-term, in order to use people's short-term impression management level to motivate their pro-environmental behaviour.

## **5. Conclusion**

This thesis aimed to integrate research on media as well as research on the determinants of pro-environmental behaviour, and to explore the function of emotions as the underlying mechanism. The conceptual model (Figure 1) has been developed and tested. In general, the model has been partly supported by the research, and the findings show that a pro-environmental message provided via different media channels and at different interruption levels can have consequential impacts on people's decision-making. Moreover, the research indicated that people's experienced emotions mediate the effect of media messages on their pro-environmental behavioural intention. Furthermore, it has shown that with regard to a pro-environmental message, people's impression management level not only has an effect on their experienced emotions, but also on their pro-environmental behavioural intentions. The results of the current study addressed some of the pro-environmental behavioural decision-making related issues and shows implications of how a pro-environmental message can be more efficiently used and spread by marketers and policy makers in motivating people's pro-environmental behavioural intentions. It offers yet another step in upgrading the current understanding of the role of emotions in pro-environmental behaviour related topics.

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## Appendix 1

In Study 1, the questionnaires through all conditions consist with same questions. Hence, expect for full questionnaire used in Facebook condition, only front pictures of each condition will be presented in appendix 1.

### Study 1 Facebook condition



You are invited to participate in a research experiment on “Advertising Study on Monetary Donation Request”. We are exploring what do people think of certain messages they receive.

You will be requested to complete a short online survey. This study will takes approximately 10 minutes of your time.

This study is conducted by a master student from Marketing and Consumer Behavior Group at Wageningen University and Research Centre. Your responses will be anonymous and completely confidential. The data will be averaged and reported in aggregate, and will be used for scholarly purpose only.

Please click next page to start.



Please imagine the following picture is cut from your own Facebook page. A donation request from World Wide Fund for Nature (WWF) is shown up on your Facebook page. Please read the message carefully.



### 1. Please answer the following questions.

How likely would you like to share the message to your post wall?	Very unlikely 1	2	3	4	5	6	Very likely 7
	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
How probable would you like to share the message to your post wall?	Very improbable 1	2	3	4	5	6	Very probable 7
	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
How possible would you like to share the message to your post wall?	Very impossible 1	2	3	4	5	6	Very possible 7
	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

### 2. Please answer the following questions.

How likely would you like to donate for helping polar bears?	Very unlikely 1	2	3	4	5	6	Very likely 7
	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
How probable would you like to donate for helping polar bears?	Very improbable 1	2	3	4	5	6	Very probable 7
	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
How possible would you like to donate for helping polar bears?	Very impossible 1	2	3	4	5	6	Very possible 7
	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

### 3. Please indicate how much money (in euro) you like to donate for helping WWF ensure polar bears's survival from global warming? Please type the answer in the box below.

### 4. When seeing the advertisement, you might experience multiple emotions. Please indicate for every emotion to what degree you felt it when seeing the advertisement on your Facebook page.

	Not at all 1	2	3	4	5	6	Extremely 7
Happiness	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Sadness	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Anger	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Surprise	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Fear	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Disgust	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Pride	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Shame	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Guilt	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Embarrassment	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Gratitude	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Hubris	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**5. We are interested in the reasons why you decided to donate that amount of money. Below we have a list with possible reasons. Please indicate for every reason to what degree it plays a role in your decision to donate or not donate.**

	Not at all 1	2	3	4	5	6	Very strong 7
I want my friends to know that I have concerns to wildlife animals or global environment.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I want my friends value me highly by make contributions to wildlife animals.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
My friends think I should have more concerns to wildlife animals.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Many of my friends think everybody should be responsible to wildlife animals or to the global environment.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I want to become a person who has concerns to wildlife animals or global environment.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I want to become a person who has ever made contributions to wildlife animals or global environment.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am a person who has concerns to wildlife animals or global environment.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I believe everyone should contribute to helping wildlife animals or improving global environment.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I love polar bears or the North Pole, I want to do something good to them.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I talk a lot wildlife-related or global environment-related topics with my friends.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**6. Below we have a list of general remarks of personal characteristics. Please indicate to what extent each of the following items best fit your character.**

	Extremely uncharacteristic of me 1	2	3	4	5	6	Extremely characteristic of me 7
I am concerned about my style of doing things.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am concerned about the way I present myself.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am self-conscious about the way I look.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I usually worry about making a good impression.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
One of the last things I do before I leave my house is look in the mirror.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am concerned about what other people think of me.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am usually aware of my appearance.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**7. What type of social media channel do you use the most for receiving new information? (Multiple answers possible)**

- |                                   |                                    |
|-----------------------------------|------------------------------------|
| <input type="checkbox"/> Twitter  | <input type="checkbox"/> Newspaper |
| <input type="checkbox"/> Facebook | <input type="checkbox"/> TV news   |
| <input type="checkbox"/> E-mail   | <input type="checkbox"/> Book      |
| <input type="checkbox"/> YouTube  | <input type="checkbox"/> Magazine  |

**8. Please indicate how important the use of Facebook is to you?**

Very unimportant							Very important
1	2	3	4	5	6	7	
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	

**9. Please indicate how importance updating your Facebook status is to you?**

Very unimportant							Very important
1	2	3	4	5	6	7	
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	



**10. Please indicate how important the use of E-mail is to you?**

Very unimportant      2      3      4      5      6      Very important

1      7

☐      ☐      ☐      ☐      ☐      ☐      ☐

**11. Please indicate how important Newspaper is to you for receiving new information?**

Very unimportant      2      3      4      5      6      Very important

1      7

☐      ☐      ☐      ☐      ☐      ☐      ☐

**12. What is your gender?**

- ☐ Male
- ☐ Female

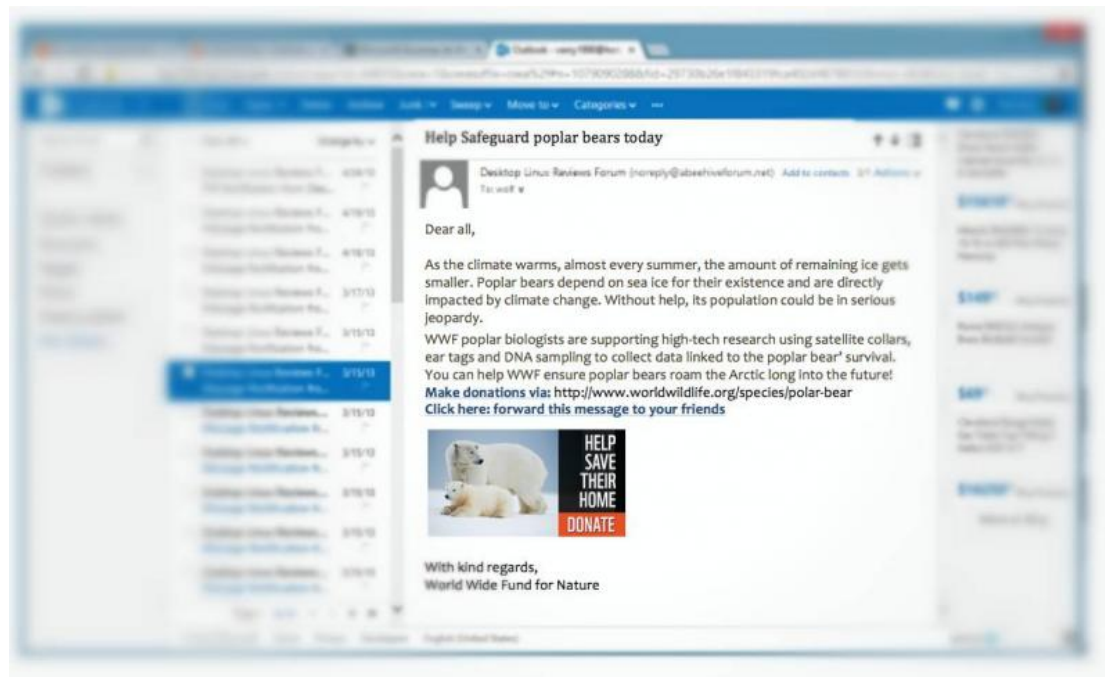
**13. What is your age?**

**14. Which country do you come from?**

**15. Please recall from which social media channel did you received the polar bear message (the picture you saw at the beginning of the survey)?**

- ☐ Facebook
- ☐ E-mail
- ☐ Newspaper
- ☐ I do not know

## Study 1 E-mail condition



## Study 1 Newspaper condition



## Appendix 2

In Study 2, the questionnaires through all conditions consist with same questions. Hence, expect for full questionnaire used in Facebook condition, only front pictures of each condition will be presented in appendix 2.

### Study 2 Facebook condition



We are exploring what do people think of certain messages they receive. For doing that, you are invited to participate in a research experiment on “Advertising Study on Monetary Donation Request” by completing a short survey. This study will takes approximately 5 minutes of your time.

This study is conducted by a master student from Marketing and Consumer Behavior Group at Wageningen University and Research Centre. Your responses will be anonymous and completely confidential. The data will be averaged and reported in aggregate, and will be used for scholarly purpose only.

Please click next page to start.

**Please imagine: You have some free time and like to search for ideas on what you can do to help protecting wildlife animals or improving global environment. While browsing through your Facebook page to look for nice things to do, you suddenly see a donation request posted by World Wildlife Fund!**

Please read the donation request carefully (second picture below).



Polar bears depend on sea ice for their existence and are directly impacted by climate change. As the climate warms, almost every summer, the amount of remaining ice get smaller in the North Pole. Without help, its population could be in serious jeopardy.

## YOUR DONATION MATTERS

Your help is desperately needed. WWF is working around the Arctic to secure a future for polar bears but we need your help.

Polar bears, the charismatic icon of the Arctic environment, have long been a focus in WWF's on-the-ground research and conservation projects in the Arctic, going back to 1972 and climate change is a primary focus of our global conservation efforts.

### YOUR DONATION COULD HELP US:

- Address climate change.
- Protect critical habitat.
- Create safer communities.
- Promote sustainable tourism.
- Support polar bear research

**DONATE NOW**

**NEED HELP WITH YOUR DONATION?**  
Contact Monika Kull, who will be happy to help you out. She can be reached by  
• Telephone +41 22 364 9290 (that's in Switzerland)  
• or by email [monika.kull@wwf.org](mailto:monika.kull@wwf.org)

**HELP SAVE THEIR HOME**  
**DONATE**

More information on: <https://support.worldwildlife.org>  
Share: Share this message with your friends!

1. Please answer the following questions.

	Very unlikely 1	2	3	4	5	6	Very likely 7
How <b>likely</b> would you share above message on your Facebook post wall?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
	Very improbable 1	2	3	4	5	6	Very probable 7
How <b>probable</b> would you share above message on your Facebook post wall?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
	Very impossible 1	2	3	4	5	6	Very possible 7
How <b>possible</b> would you share above message on your Facebook post wall?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

2. Please answer the following questions.

	Very unlikely 1	2	3	4	5	6	Very likely 7
How <b>likely</b> would you willing to donate for helping polar bears?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
	Very improbable 1	2	3	4	5	6	Very probable 7
How <b>probable</b> would you willing to donate for helping polar bears?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
	Very impossible 1	2	3	4	5	6	Very possible 7
How <b>possible</b> would you willing to donate for helping polar bears?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

3. Please indicate how much money (in euro) would you like to donate for helping WWF ensure polar bears' survival from global warming? Please type the answer in the box below.

4. When reading the donation request message, you might experience multiple emotions. Please indicate for every emotion to what degree you felt it when reading the donation request from your **Facebook page**.

	Not at all 1	2	3	4	5	6	Extremely 7
Happiness	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Sadness	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Anger	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Surprise	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Fear	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Disgust	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Pride	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Shame	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Guilt	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Embarrassment	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Gratitude	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Hubris	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

5. We are interested in the reasons why you decided to donate that amount of money. Below we have a list with possible reasons. Please indicate for every reason to what degree it plays a role in your decision to donate or not to donate.

	Not at all 1	2	3	4	5	6	Very much 7
I love polar bears or the North Pole, I want to do something good to them.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Make donation to help polar bears make me feel self-worth.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Make donation to help polar bears will make people around me value me highly.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I believe everyone should be responsible for helping wildlife animals or improving global environment.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Make donation to help polar bears is a pleasure for me, I feel glad by doing so.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I want to contribute to protecting wildlife animals and improving global environment.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Make donation to help polar make me feel good when talking about this with other people.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I discuss a lot wildlife animal protection or global environment improvement-related topics with my friends.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

6. Below we have a list of general remarks of personal characteristics. Please indicate to what extent each of the following items best fit your character.

	Extremely uncharacteristic of me 1	2	3	4	5	6	Extremely characteristic of me 7
I am concerned about my style of doing things.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am concerned about the way I present myself.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am self-conscious about the way I look.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I usually worry about making a good impression.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
One of the last things I do before I leave my house is look in the mirror.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am concerned about what other people think of me.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am usually aware of my appearance.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

7. People usually form impressions about messages that they see, and about the ways in which they see the message. We are interested in what your impressions were about the polar bear message that you just read **on your Facebook page**. Please indicate for each possible impression below to what degree you think of it when seeing the message.

	Not at all 1	2	3	4	5	6	Very much 7
Interrupted my information search	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Is believable	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Is accurate	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Information is reported in depth	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Is concerned about making profits	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Invades people's privacy	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Is concerned about the community's well-being	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Is professional	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Is favorable to people	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Is positive	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Is negative	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Is being popularly discussed	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Is published on a trustworthy channel	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Is factual	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

8. What is your gender?

- ☐ Male
- ☐ Female

8. What is your gender?

- ☐ Male  
☐ Female

9. What is your age?

10. Which country do you come from?

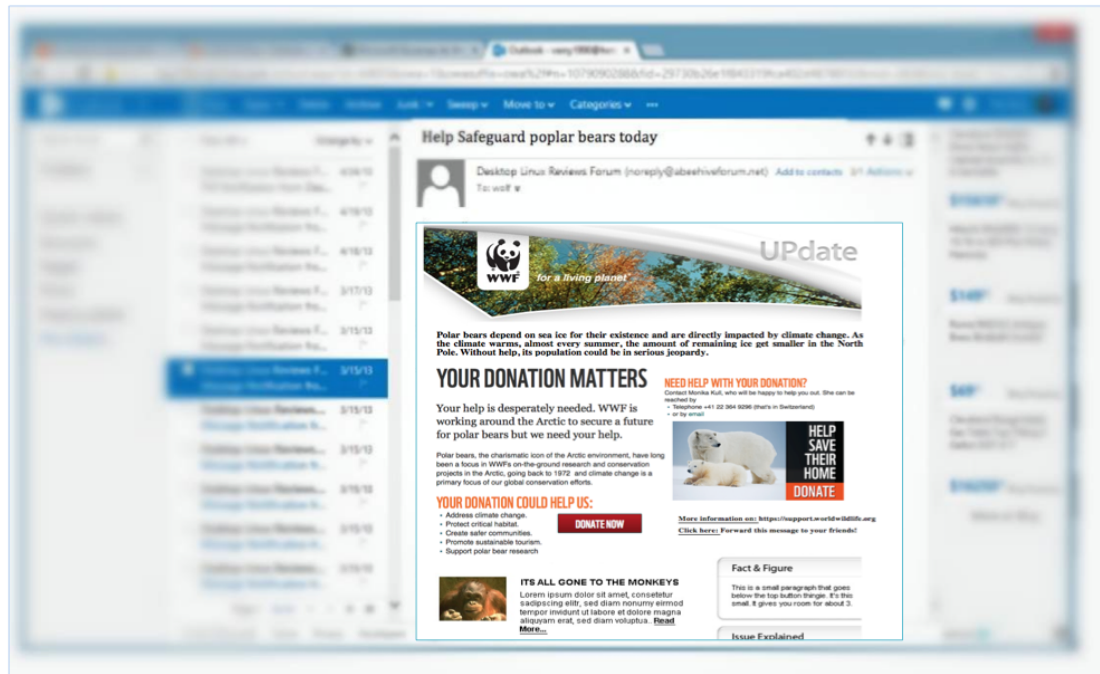
11. **Please recall:** the initial motivation for browsing your Facebook page was:

- ☐ Searching for ideas on what can do this Saturday evening  
☐ Searching for ideas on what can do to help protecting wildlife animals or improving the global environment  
☐ I do not know

12. Please recall from which social media channel did you received the polar bear message (the picture you saw at the beginning of the survey)?

- ☐ Facebook  
☐ E-mail  
☐ Newspaper  
☐ I do not know

## Study 2 E-mail condition





## Study 2 Newspaper condition

