master
thesis

Prompting sustainable behaviour: triggering a stop and re-think process through the exposure to a combination of static and dynamic norms

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28-03-2024

TUDelft

Industrial Design Engineering
Strategic Product Design

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Date of award 28-03-2024

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Abstract

Overconsumption plays a big part in the current environmental crisis, making a shift towards sufficient consumption imperative. Since overconsumption is often a habit, triggering a stop and re-think process in the consumers' minds may be the way for reduction. Societal norms, proven effective for behaviour change, could disrupt consumption habits by combining a static (present norm) and dynamic (how the norm is changing) norm. This thesis explores the impact of combining sustainable and unsustainable framings of static and dynamic norms on consumer behaviour. A laboratory study exposed participants to four norm combinations before engaging in a shopping task. No significant differences emerged in the number of items selected or the time spent shopping across groups. However, a marginally significant interaction effect hinted at the potential influence of combined static and dynamic norms: participants selected the most items with two matching sustainable norms and the least with matching unsustainable norms. Notably, upon removing older participants from the data, this interaction effect disappeared and the effect of the dynamic norm became significant. Unsustainable norms triggered significantly higher negative emotions than sustainable ones, while sustainable norms elicited significantly higher positive emotions. Yet, neither significantly mediated the relationship between static and dynamic norms and item selection. These findings are relevant for marketeers and (communication) designers of companies seeking to engage in demarketing or government agencies promoting sufficient consumption. These results can lay the foundation for more extensive research into this combination of static and dynamic norms, which could be used to make stronger messages to promote both sufficient consumption and other sustainable behaviour.

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1. Introduction

It is widely recognised that the world is currently facing a substantial environmental crisis. A big part of this crisis is related to individual's consumption choices and in particular to the phenomenon of "overconsumption" of goods (Brown & Cameron, 2000). This phenomenon is supported by the current economic system based on continuous growth, which fosters over-production and the exploitation of earth's resources at a faster pace than it can regenerate (Kiss, 2018). To visualise this phenomenon, the Global Footprint Network (2023) introduced the "Earth Overshoot Day", namely a day in a year when the global human demand for ecological resources exceeds the earth's capacity to renew them in that same year. This day has shifted earlier and earlier every year – it was in the end of December in 1971 and it is now at the end of July in 2023 (Global Footprint Network, 2023). Researchers are increasingly indicating that a solution to this environmental crisis may be found in an alternative modus of production and consumption, particularly based on "sufficiency", namely the production and consumption of a sufficient amount of goods that satisfies everyone's wellbeing (including the one of the environment) (Garcia et al., 2021; MacKinnon, 2021; Waters, 2021). If people reduce their purchases, this would significantly drop emissions and pollution, much more than any sustainable product alternative will ever achieve (MacKinnon, 2021). Although the precise impact of this shift has not been researched enough yet, the overall consensus is that strategies based on sufficiency can reduce resource and energy consumption and thus contribute to a decrease in environmental decline (Reichel, 2018).

1.1 Defining over and sufficient consumption

In Park's Dictionary of Environment and Conservation, overconsumption is defined as "the use of renewable resources faster than natural processes can replace them" (Park, 2007). Including a behaviour perspective to this definition, Ehrlich and Ehrlich's (2004) state that people are overconsuming when they are consuming more than needed to maintain their well-being and obtain reasonable comfort. Similarly, Ehrlich and Goulder (2007) define consumption as excessive when it does not allow the sustaining of well-being over generations. Combining these consumer and environmental standpoints, overconsumption can be described as consumption that is more than needed for maintaining one's own and the earth's well-being over a longer period of time.

To reduce overconsumption, the term "sufficiency" was introduced as a more sustainable strategy, over both the strategy of eco-efficiency and eco-consistency (Jungell-Michelsson & Heikkurinen, 2022). Eco-efficiency refers to the ratio between the value generated and the resources extracted (Figge et al., 2014). In other words, making products by using resources in a way that is less harmful to the environment; thinking of reusable alternatives for typically single use items or creating products using less water than usual (Heikkurinen et al., 2019). Eco-consistency is about the compatibility of technological manufacturing processes with the environment, in which the ideal consistency would mean perfect circularity (Speck et al., 2022). Consistency strategies are therefore focused on recycling, re-using and the circular economy (Reichel, 2018). While these strategies can be used to reduce consumption since they focus on making products last longer (eco-efficiency) or reducing the need to buy new things (eco-consistency), their effects can be limited as they can still promote over-consumption of goods, even if they are a more sustainable alternative. They, indeed, focus on making the products that consumers buy more sustainable instead of reducing the amount of items people purchase in its entirety. This is the reason why sufficiency related approaches are progressively considered more promising (Tröger & Reese, 2021).

The causes of overconsumption concern 1) easier access to purchasing points through online shops where the threshold for making a purchase is becoming lower and lower, 2) highly engaging marketing methods, and 3) quicker and easier purchasing procedures (Hartston, 2012). Besides, shopping can for some consumers trigger feelings of contentment, although often only momentarily (Clark & Calleja, 2008). All of these characteristics boost over-consumption because consuming is made overly convenient, causing it to be a recurring habit and an automatic act for most people (Garcia et al., 2021). Since people barely have to think when they are going through a consumption process, since every step has become very simple and quick, a process of automaticity is triggered every time someone is on the verge of making a purchase.

1.2 Disrupting the habit of overconsumption through the "Stop and re-think" process and social norms

The key to counteracting overconsumption might be disrupting the automatic process of "shopping as usual" and getting consumers to reflect on whether a purchase is really needed, by activating a stop and re-think process. In other words, it is necessary to trigger a more cognitive and conscious process in consumers' minds and make consumers reflect whether a new purchase is really needed. Changing habits and activating this stop and re-think process can be complex (Bhamra et al., 2011), but social norms can play an important role, as included in the theory of planned behaviour (Ajzen, 1991). Social norms are defined as the im- and explicit rules that a group has to indicate what behaviour, values and beliefs are acceptable for its members (Aronson et al. 2005). Therefore, by representing what is typically accepted in a particular context, social norms could be framed as "the habit of many", those typical and habitual behaviours that are perpetuated by the majority of members in a particular context. Research has focused on the link between social norms and sustainable behaviour by, for example, investigating the effect of exposing people to a sustainable or unsustainable behaviour, which was framed as the norm in that social context (Sparkman et al., 2020; Ceshi et al., 2021; Loschelder et al., 2019). If, for example, eating meat is the (unsustainable) social norm to which consumers are exposed, those consumers will have a tendency to follow this norm (and eat meat) without thinking too much about it. The exposure to this norm will prevent them from behaving more sustainably and becoming a vegetarian (Sparkman et al., 2020). Further evidence on the effect of social norms on people's behaviour was demonstrated in the so called "Broken windows theory", which dictates that when an environment exhibits signs of crime, such as broken windows, chances of elevated crime rates are high (Wilson & Kelling, 2017). Ceschi et al. (2021) found a similar effect in a sustainability related scenario; when people had to dispose waste, they were more likely to recycle when exposed to a low waste environment than when surrounded by rubbish. Sparkman et al. (2020), found that this effect can also be used to achieve the opposite; exposing consumers to a sustainable norm or normalising a sustainable behaviour can make consumers follow this sustainable behaviour. Although social norms represent a key component in behavioural change context, more research is needed to understand how social norms can be applied in the environmental

context (Kim and Seock, 2019). Especially, up to now, research on how social norms can be used to change a particular behaviour as the one of overconsumption has been scarce. This is relevant to study as overconsumption is a type of behaviour that needs to change in order to reduce the environmental impact of current consumption modus. This thesis will address this knowledge gap by investigating the effects of social norms (static and dynamic) through design interventions to reduce overconsumption.

Social norms can be distinguished between two types of norms: static norms, namely the current state of what is normative, and dynamic norms, namely the change of a norm over time (Sparkman & Walton, 2017). If a norm that is generally bad for the world is improving, highlighting this by displaying a dynamic norm can be beneficial to encourage the desired behaviour, as was found in a study by Loschelder et al. (2019). In this study, participants chose to use a sustainable coffee cup when shown that more and more people were doing so. An experiment by Sparkman & Walton (2017) had similar outcomes; when shown that people ate decreasing amounts of meat, their participants would purchase less meat in a canteen. The authors highlight that this may be because showing a dynamic norm can make people anticipate a changed future, while seeing the perceived significance of this behaviour to others.

Research on dynamic and static norms is a relatively new area, and while research has been conducted in finding the effects of presenting people with either static or dynamic norms, research on the effects of combining the two is missing (Loschelder et al., 2019; Sparkman & Walton, 2017). It remains unexplored what the effect is of combining the norm of the present, namely static, to the norm of the future, namely dynamic on people behaviour. Besides that, the link between social norms and design interventions needs further investigation (Cislaghi & Heise, 2018). Despite few attempts on the effects of text and banners displaying norms (Loschelder et al., 2019), scarce research has delved into the impact of incorporating the social norms into the actual design of products or online shopping settings.

Addressing these knowledge gaps, this thesis aims to investigate the effects of combining a static and dynamic norm into a design intervention to reduce overconsumption. By doing that, this thesis will specifically address the link between social norms (in particular, combining static and dynamic norms), design interventions and sustainable behaviour (in particular, sufficient vs overconsumption). The

following research question is addressed: "How does the presentation of a combination of static and dynamic norms in design interventions trigger a stop and re-think process in consumers' minds and help to reduce overconsumption?"

This thesis starts with a review of relevant literature to create a theoretical background. An outline of the research methodology follows. Next, the results of the research will be presented and analysed, followed by a discussion of these results. Lastly, implications and limitations will be addressed, as well as suggestions for future research.

2. Theoretical background

2.1 Design for demarketing and sufficient consumption

A recent phenomenon that promotes sufficient consumption is demarketing. Differently from traditional marketing, which seeks to increase consumer demand and promote the sale of products, demarketing actively discourages consumers from making purchases (Reich & Armstrong Soule, 2016). A well-known example of demarketing is the Patagonia "Don't buy this jacket" campaign (Patagonia, 2011), which encouraged consumers to think carefully about their consumption choices and consider the environmental impacts of their purchases. Another example is represented by the initiative of the Dutch chain store Dille & Kamille, which decided to close the doors of its shops on Black Friday as opposed to offering discounts in store and let their employees do volunteer work to ask for attention for nature instead (Dille & Kamille, 2022). Although demarketing can be used to promote sufficient consumption, companies cannot solely rely on it, as they of course need to keep making a profit in order to exist (Gossen & Kropfeld, 2022).

The terms of demarketing and sufficient consumption (opposite to overconsumption) have often been associated with the minimalism trend. With this, consumers focus on simplicity and functionality, which usually results in a minimal amount of possessions (Błoński & Witek, 2019). This lifestyle aims for a clean and tidy living environment by eliminating unnecessary distractions and possessions. Sub-trends closely associated with minimalism are "capsule wardrobe", which entails owning a small amount of versatile and durable pieces of clothing than can be combined in different ways (Bardey et al., 2021),

and "decluttering", a process of systematically reviewing your belongings and discarding items that are no longer wanted or needed (Manke & Gollnhofer, 2020). The minimalism trend was especially big in the mid-2010s, with i.e. Marie Kondo inspiring people around the world to declutter by asking themselves whether items "sparked joy" through her books and Netflix series (Sandlin & Wallin, 2021).

A trend that is more recent and has therefore not yet reached its high point is the sharing economy. Here, products are not offered for individual ownership; instead they are provided as services for temporary use or rental (Kathan et al., 2016). This concept is particularly prominent in the accommodation (e.g. AirBnB) and transportation (e.g. share scooters or cars) sectors (Puschmann & Alt, 2016; Hossain, 2020). It is also emerging in, for example, the fashion field, where an increasing number of companies allow consumers to rent their clothing items rather than purchasing them (Liu et al., 2022; Yuan & Shen, 2019). While these practices are not yet very common, the incorporation of these practices and consumption modus (sufficient, circular, minimalistic, shared etc..) into the social norm might encourage more people to engage with them.

2.2 Social norms and behaviour

Social norms have a fundamental influence on people's behaviour and represent a critical aspect in understanding how to change a behaviour (Kim & Seock, 2019). Social norms play a substantial part in how we act, because not following them can result in social judgement (Higgs, 2015). The fear of being criticised or judged often brings individuals to conform to prevailing norms. Because norms are so ingrained in our daily lives, people tend to not be deliberately aware of them and follow them unconsciously (Young, 2015). They are such a big part of our daily social interactions, that they often go unnoticed. As a result, adhering to norms becomes a matter of habit for most people. Interestingly, even if people know that the norm they are exposed to is entirely arbitrary, they still tend to conform to it (Pryor et al., 2018). This underscores how compelling social norms are; the psychological pull of conforming to them is so strong, that it can override rational judgement.

Influencing people's behaviour through norms is often called "norm-based nudging". Norm-based nudging can be considered as a form of (design) intervention that highlights the social norm to alter an

individual's behaviour without taking away any freedom of choice (Thaler & Sunstein, 2008). As opposed to more coercive methods, norm-based nudging does not restrict the choices of an individual, but rather modifies the presentation of the available options to steer someone towards a particular direction (Schmidt & Engelen, 2020). A classic example of norm-based nudging is often seen in hotels, where signs are placed in bathrooms to encourage guests to reuse their towels. By subtly showing these social reference points, the signs may motivate guests to also reuse their towel (Nisa et al., 2017). Norm-based nudges are a non-intrusive way of showing individuals what the norm is and of trying to get people to follow these norms, by making use of people's tendency to follow what they see is commonly done or appropriate in their social setting (Bicchieri, 2023). However, norm-based nudges need to be carefully designed in order to be effective: whether they work might depend on the group of people targeted on whether the information comes from reliable sources and whether positive behaviour is pointed out (Bicchieri & Dimant, 2019). Next to that, if someone's pre-existing preferences are too far from the depicted norm, the nudge might also be ineffective (Bicchieri & Dimant, 2019).

Social norms are distinguished into injunctive and descriptive norms. Injunctive norms show the perception of what other people in the social context believe to be appropriate (Cialdini, 2003). They convey moral standards through an anticipated approval or disapproval from society (Cialdini, 2007). On the other hand, descriptive norms show observed behaviours and what people actually do in a social group (Cialdini, 2007). They are more implicit, arise from the perception of how others behave and rely on thinking that if others are behaving in a certain way, it must make sense to do the same (Rivis & Sheeran, 2003). Injunctive norms direct people towards performing a certain behaviour through social evaluation, whereas descriptive norms do this through social information (Cialdini, 2007). A lot of research has been done into the effects of both descriptive and injunctive norms. In this regard, research has showed that to change behaviour, the alignment of both norms is needed and most effective (Cialdini, 2003; Schultz et al., 2008).

Another way to distinguish social norms is between dynamic and static. Static norms are what is currently considered normative, up to that moment in time, whereas dynamic norms display how a norm is changing over time (Sparkman & Walton, 2017). For example, the same message could be framed

either in terms of a static norm (e.g., the majority of people in the Netherlands eat meat) or in terms of a dynamic norm (the amount of people in the Netherlands that eat meat is increasing) (Sparkman & Walton, 2017). If the desired behaviour is not yet embraced in the social norm (e.g. most people being vegetarians), framing a message as a dynamic norm can show people how society is changing and therefore trigger them to follow the depicted change and start behaving in the desired direction (Loschelder et al., 2019).

Research has shown that a dynamic norm has a stronger effect on people's behaviour than a static norm does (Sparkman & Walton, 2017; Loschelder et al., 2019). Loschelder et al. (2019) researched whether presenting consumers message framed like a norm next to a coffee machine influenced the type of mug they would choose for their beverage, and found that the dynamic norm (a sign saying "*Our guests are changing their behavior: More and more are switching from the to-go-cup to a sustainable alternative.*") was more effective in getting people to perform the desired sustainable behaviour, namely choosing a reusable cup, than a static norm (a sign saying "*25% of customers choose a reusable mug*"). Similarly, another study showed that presenting students with a dynamic norm stating "*Research from 2019 has found that 75% of college students either do not engage in any alcohol use at all, or refrain from heavy drinking (i.e., 5 or more drinks in a single occasion). The percent has increased steadily over the past six years (see figure below). These trends indicate that more-and-more students are avoiding risky alcohol use behaviors*" was more effective in encouraging students to decrease their alcohol usage, than when a static norm was presented ("*Research from 2019 has found that 75% of college students either do not engage in any alcohol use at all, or refrain from heavy drinking behaviors (i.e., 5 or more drinks in a single occasion*") (Graupensperger et al., 2021).

2.3 The current research: combining static and dynamic norms for behavioural change

While separately a dynamic norm seems to have a stronger effect on consumer's behaviour than a static norm, the effect of combining the two into one intervention has not yet been sufficiently researched (Loschelder et al., 2019; Graupensperger et al., 2021; Sparkman & Walton, 2017). Understanding how static and dynamic norms work in combination is relevant for various reasons: firstly, research has showed that the combination of descriptive and injunctive norms is more effective in changing people

behaviour rather than using them in isolation (Cialdini, 2003). This principle may extend to the combination of static and dynamic norms. Secondly, the combination of static and dynamic norm might be useful to trigger a stop and re-think process in consumers' minds, where the static norm triggers the "stop" moment and the dynamic norm triggers the "re-think" moment. Indeed, a static norm would be useful to show consumers what is currently going on in the world, namely the accepted status quo until now, and the dynamic norm would be useful to highlight the change. In this thesis, I propose that the static norm (the accepted status quo up to now) would remind consumers about the current situation, triggering a stop moment, where consumers' attention is triggered and activated. The dynamic norm would emphasise a change, a transition in the current status and help consumers re-think and reflect on the current change happening. The combination of the two norms then, would make consumers stop and re-think on where they want to stand as consumers – whether to stick with the status quo (static norm) or be part of the change (dynamic norm). Therefore, the preliminary proposition of this thesis is that the combination of a static and dynamic norm can be a viable way to trigger a stop and re-think process in the consumer's mind and in turn be effective for a behavioural change (towards a sustainable direction). Therefore, in the current thesis, static and dynamic norms will be explored in combination (rather than in isolation).

PROPOSITION 1: The combination of static and dynamic norms triggers a stop and re-think process in the consumer's mind, effective for behavioural change.

Static and dynamic norms can be framed in either a positive or negative way, meaning that they show positive or negative behaviour. This framing can align between the two norms, which means that both the static and dynamic norms are framed positively or both are framed negatively. The framing of the two norms can also misalign; one norm is positively framed, while the other is negatively framed. In the context of the current thesis which investigates how to reduce overconsumption (an unsustainable practice), both the static and dynamic norm could emphasise that most people behave unsustainably (and therefore align with each other). Here, the static norm could say that most consumers tend to consume more than necessary and are therefore polluting the environment. If, in this case, the dynamic norm is aligned with this static norm, it would highlight that this unsustainable behaviour is increasing,

indicating an increase in overconsumption. Here, both norms are negatively framed and therefore both the status quo (static norm) and the change (dynamic norm) show unsustainable behaviour. On the other hand, framing of these norms could misalign with one another, with, for instance, the static norm showing unsustainable behaviour and the dynamic norm showing sustainable behaviour. These norms could then be displayed as follows: "Most consumers tend to consume more than necessary and are therefore polluting the environment (static norm), however, this is changing as consumers are becoming increasingly aware of the negative effects of consumption and engage more in sufficient consumption (dynamic norm)".

The following questions seem to relevant: 1) Which combinations of norms is more effective? 2) Should static and dynamic norms be paired in such a way that misalign or align with each other? and 3) Why is this the case? This thesis seeks to address these questions by investigating the different pairings of sustainable framing in the combination of a static and a dynamic norm.

To find the effect of these pairings on consumption behaviour, it is considered that consumption behaviour can be measured by two different aspects. The first is how many items a consumer is buying, where a high number of items would be considered overconsumption (or unsustainable behaviour) and a low number of items would be considered sufficient consumption (or sustainable behaviour). The second is the amount of time someone spends making consumption decisions. Research has shown that high time pressure correlates with the affective components of impulsive buying, while a low time pressure correlates with its cognitive aspects (X. S. Liu et al., 2022). This might suggest that if consumers spend longer when making purchases, they go through a more cognitive process, implying the disruption of habits and thus the presence of a stop and re-think process. As overconsumption is seen as a habit and the goal of the current research is to find out whether we can disrupt this habit and trigger a more cognitive process, the time that consumers spend purchasing can be seen as a way of measuring their depth of processing. If the time is longer, it an be assumed that the consumer is having a more cognitive purchasing process, since they think longer about their choices.

> **PROPOSITION 2:** The level of sufficient consumption can be measured by the number of items a consumer buys and the time they spend doing so.

Considering that the purpose of this thesis is to investigate the different pairings of sustainable framing in the combination of a static and a dynamic norm, it is hypothesised that a misaligned combination of a static and a dynamic norm is more effective in changing behaviour than an aligned combination.

> **PROPOSITION 3:** The combination of a static and dynamic norm is more effective for behavioural change (towards a more sustainable direction) when it includes a mismatching framing (both static and dynamic norm point in opposite directions) than when it includes a matching framing (static and dynamic norms point in one direction).

This proposition is supported by the research on reactions to newness in product design, which states that highlighting a change and emphasising a transition can attract attention (Schoormans & Robben, 1997; Berlyne, 1957). Similarly, products that surprise consumers are generally more intriguing for them (Becattini et al., 2020). Something new that diverges from what a consumer expects can trigger a surprise reaction, interrupt their automated behaviour and with that capture their attention (Granato et al., 2022). This might be similar to the way consumers react when presented with a dynamic norm that is mismatched with the presented static norm, as it shows an obvious change in society, deviating from the status quo. This mismatch in framing between static and dynamic norms may disrupt consumers' automated behaviour and catch attention. The emphasis on the change and transition, triggered by a mismatching framing between the static and dynamic norm, would in turn trigger the stop and re-think process in the consumer's mind. Considering this, the first hypothesis is formulated:

> **H1:** If the combination of a static and dynamic norm includes a mismatch in the sustainability related framing (unstainable static norm + sustainable dynamic norm or sustainable static norm + unsustainable dynamic norm) consumers would be more responsive in changing their behaviour and would engage more in sufficient consumption than when the combination of static and dynamic norm includes a matching framing (unsustainable static + unsustainable dynamic or sustainable static + sustainable dynamic).

Important is that, in this hypothesis, it does not matter whether it is the static or the dynamic norm that is framed sustainably. It only states that the mismatch in framing shows a bigger change in society than with matching framing, thus triggering a stronger reaction and, in consequence, behaviour change in the consumer. In addition, considering that, in general, a dynamic norm has a stronger effect on consumer behaviour than a static norm does (Sparkman & Walton, 2017; Loschelder et al., 2019; Graupensperger et al., 2021), a second hypothesis is formulated:

> **H2:** If the combination of norms includes an unsustainable static norm and a sustainable dynamic norm, consumers would be more responsive in changing their behaviour and would engage more in sufficient consumption than when the combination includes a sustainable static and an unsustainable dynamic norm.

This happens because the dynamic norm is stronger than the static norm and would highlight a positive change. Regarding an aligning combination of norms, a third hypothesis is formulated:

> **H3:** If the combination of norms includes a sustainable static norm and a sustainable dynamic norm, consumers would be more responsive in changing their behaviour and would engage more in sufficient consumption than when the combination includes an unsustainable static and unsustainable dynamic norm.

This hypothesis is supported by the "broken windows theory", that states that disorder in an environment (the metaphorical broken windows) will lead to more crime and disorder in the community (Wilson & Kelling, 2017), or; a negative norm leads to negative behaviour. It is worth noting that this theory has, so far, only been proven in the field of criminology and not yet in the field of sustainable behaviour and it is therefore uncertain whether it is also applicable here, namely whether an unsustainable behaviour framed as the norm will lead people to follow the same behaviour or reject it. However, there are studies that prove a similar effect in a sustainability context. In particular, research has shown that policies on recycling proved more effective (people were more inclined to recycle) when there was less waste in the environment around them (Ceschi et al., 2021). In other words, if confronted with the fact that others currently do not recycle as much, as seen by the rubbish around them, the participants tended to also not

recycle. Therefore, it can be assumed that, in the current research, if both the static and dynamic norms are framed in an unsustainable way, the consumer will turn to more unsustainable behaviour, in comparison to the other sustainable framing combinations.

H3 is also supported by research on social psychology and persuasiveness. When combining a sustainably framed static norm with a likewise sustainably framed dynamic norm, this might lead to sustainable behaviour, as more arguments for the same cause can improve the persuasiveness of the overall message (Petty & Cacioppo, 1984). In other words, a double norm might increase its persuasiveness. On the other hand, however, when both the static and dynamic norms are framed sustainably, moral licensing might occur: this is a mental process in which individuals rationalise immoral behaviour because they previously performed moral behaviour and think they have already done their part (Dütschke et al., 2018). In a social context, someone might justify behaving immorally because they see others are behaving morally (Lasarov et al., 2022). Looking at this from a sustainability perspective, this would mean that if people see that sustainable behaviour is becoming the norm, they might engage in more unsustainable behaviour themselves, as they do not feel obligated to also act sustainably since something is already being done. Considering these theories, contradicting hypotheses could be formulated, and therefore H3 deserves further investigation.

Previous research has shown that emotions elicited by sustainable messaging can have impact on sustainable consumer behaviour (Fröhlich et al., 2013). For example, research by Taufique (2020) showed that a higher emotional affinity toward nature had a positive effect on green consumer behaviour, claiming that emotionally appealing messaging is therefore an effective way to advertise sustainable consumer behaviour. Besides, it is suggested that people might behave sustainably because of the anticipated positive emotions that they might feel when doing so (Brosch & Steg, 2021). Thus, the emotional effects of the sustainable framing of static and dynamic norms can potentially impact the behaviour of consumers and therefore the following hypothesis is proposed:

> **H4:** The emotions elicited by the display of (un)sustainably framed static and dynamic norms will mediate the relationships between the static norm, the dynamic norm and the level of sufficient consumption.

To summarise the relationship between static and dynamic norms and their sustainability framing on sustainable behaviour, Figure 1 shows a conceptual research model.
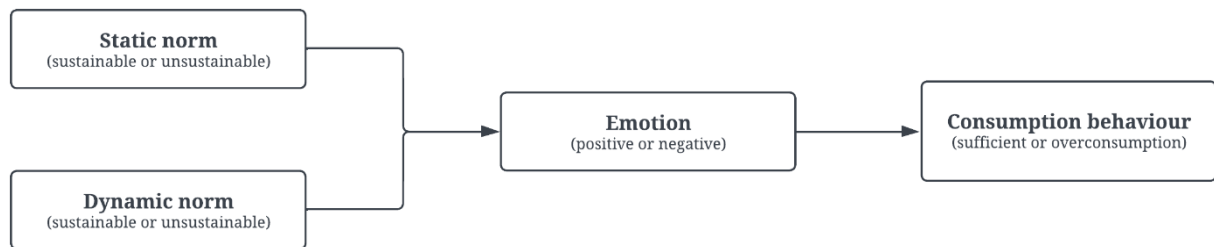
Figure 1: The research model

To research the aforementioned hypotheses, the product category of fashion products was chosen, as it represents one of the most polluting industries in fast moving consumer goods (Abbate et al., 2023; Nayak et al., 2020) in which consumers likely engage in overconsumption (Becker-Leifhold, 2018). To manipulate the framing of sustainable / unsustainable norms a video material was created and showed to the respondents for norm exposure. To measure which combinations of static and dynamic norms were more effective to reduce overconsumption of fashion products, respondents were asked to behave as they normally would while shopping online while they were guided through a webshop like experience within a questionnaire. They were shown six pages with nine products, for each of which they were asked which items they wanted to add to their basket.

3. Method

3.1 Participants and design

To achieve a sufficient power ($>= 0.80$) for detecting a medium effect size ($f = 0.25$) at a significance level of $p < .05$, a minimum sample size of 176 participants was calculated (G*Power 3) (Faul et al., 2007). A total of 292 participants were recruited for the study at the IDE faculty at Delft University of Technology. There were no participants who did not complete all questions, and all participants showed sufficient variation in their answers. Extreme outliers were detected using a boxplot of the number of items participants selected, were data were indicated as extreme outliers when they extended more than three box-lengths from the box. The experiment included two attention checks, both being a question

about the manipulation to see whether the participant paid attention to its contents. After excluding 19 participants who failed both attention checks, and 2 participants whose answers contained extreme outliers, a final sample size of 271 participants (Mage = 22.86 years, SD = 5.69, 55.0% female, 1.1% other gender or prefer not to say) was used for data analysis.

The participants were invited to test a web shop in a questionnaire. They were randomly assigned to one condition in a 2 (static norm: unsustainable/sustainable) x 2 (dynamic norm: unsustainable/sustainable) between-subjects design. Each condition included the combination of a static and a dynamic norm. Upon completion of the experiment, participants were offered a chocolate bar as a thank-you gift.

Table 1: Experiment design of the 2 x 2 between subject conditions.

		Dynamic norm	
		Sustainable	Unsustainable
Static norm	Sustainable	1 (matching framing)	2 (mismatching framing)
	Unsustainable	3 (mismatching framing)	4 (matching framing)

3.2 Stimuli and manipulations

The chosen product category for the experiment was fashion. To present the different norms and framing, 4 videos were created in which the following elements are manipulated: 1) text, 2) text colour, 3) photos and 4) animation. A text was created to manipulate the static and dynamic norm, as done in previous research (Loschelder et al., 2019; Aldoh et al., 2021), a full comparison can be found in Table 2. The texts for the static norms were "Recent research has shown that most people in the Netherlands only buy clothes they need." (sustainable) and "Recent research has shown that most people in the Netherlands buy more clothes than they need." (unsustainable), and the texts for the dynamic norms were "But/and in general the amount of clothes they purchase is decreasing." (sustainable) and "But/and in general the amount of clothes they purchase is increasing." (unsustainable).

Table 2: Manipulation texts

	Original text (Loschelder et al., 2019)	**Original tekst (Aldoh et al., 2021)**	**This research adjustments**
Static norm	*"Our guest are showing the following behaviour: Approximately 25% are choosing a sustainable cup instead of a to-go-cup. Choose a sustainable cup!"*	*"Recent research has shown that 30% of people in the UK make an effort to limit their meat consumption. That means that 3 in 10 people in the UK eat less meat than they otherwise would. Why do you think that is?"*	*"Recent research has shown that currently 80% of consumers make an effort to limit the amount of clothes they buy, purchasing only the clothes they need."* (sustainable) *"Recent research has shown that currently 80% of consumers do not make an effort to limit the amount of clothes they buy, purchasing more clothes than they need."* (unsustainable)
Dynamic norm	*"Our guests are changing their behaviour: More and more are switching from the to-go-cup to a sustainable alternative. Take part in this: Choose a sustainable cup (e.g. coffee-mug or keep-cup) and help to protect the environment."*	*"Recent research has shown that in the last 5 years, 30% of the people in the UK have now started to make an effort to limit their meat consumption. That means that, in recent years, 3 in 10 people in the UK have begun to eat less meat than they otherwise would. Why do you think that is?"*	*"But /and they are changing their behaviour; more and more consumers are engaging in sufficient consumption, purchasing less clothes than before and only what they really need."* (sustainable) *"But /and they are changing their behaviour; more and more consumers are engaging in over-consumption, purchasing more clothes than before and more than they really need."* (unsustainable)

To emphasise the (un)sustainable framing of the norms, the colour of the text was adjusted from red for the unsustainable framing, to green for the sustainable framing, since these colours are generally linked to unsustainability and sustainability (Steenis et al., 2017).

Lastly, to visualise the norms, a combination of an animation and two photos was used for every norm type. The choice was made to add an animation next to the photos, as this was more easily created to show exactly what was needed and the manipulation could be made stronger by including "moving" elements (e.g. clothes disappearing out of the closet one by one for the unsustainable static to sustainable dynamic condition). The animation consisted of a closet filled with clothes and people standing next to the closet with shopping bags in their hands. The animation frame for the sustainable static framing showed 1) a closet with 29 items and 2) two people, both with two shopping bags, where the unsustainable static framing showed 1) a closet with 35 items and 2) two people with 2 and 3 shopping

bags. For the dynamic norm, the sustainable framing showed 1) a closet with 15 items and 2) three people, all with one shopping bag. The unsustainable dynamic norm showed 1) a closet with 49 items and 2) three people with 3, 5 and 5 shopping bags. In each experimental condition, the frames depicted varying degrees of sustainability. The unsustainable dynamic norm showed the most unsustainable condition, followed by, first, the unsustainable static norm and, second, the sustainable static norm. Lastly, the sustainable dynamic norm being showed the most sustainable condition. The unsustainable dynamic norm, being the most unsustainable, showed 49 items as this was how many fitted into the closet to make it full but not overflowing (as to prevent the condition to look messy in comparison to the others). Similarly, the amount of shopping bags was the maximum amount that fitted onto the people in the image. In subsequent conditions representing increasingly sustainable behaviours, between six to fourteen items and zero to one shopping bag per person were systematically removed. These adjustments were made based on visual judgment to ensure that each condition appeared progressively less cluttered compared to the preceding, less sustainable condition. Additionally, in dynamic condition frames, an extra person was included to underscore the notion that more individuals were engaging in the sustainable behaviour.

A set of two photos representing the respective framing was used for each norm condition. These two photos all show different aspects of that framing in the context of overconsumption and are shown underneath each other in one frame in the video. Similar to the animation, the photos showed a similar subject related to consumption behaviour, but with varying degrees of sustainability across the conditions. The photos for the sustainable static framing showed 1) a customer grabbing one item and thinking about it and 2) a customer holding one shopping bag, where the unsustainable static framing showed 1) customers grabbing items and putting them in shopping carts and 2) a customer walking with four shopping bags. For the dynamic norm, the sustainable framing showed 1) a customer thinking in front of a rack of clothes, without touching any items and 2) two empty hands, without any shopping bags. The unsustainable dynamic norm showed 1) a shopping mall filled with customers with shopping bags and 2) five customers walking with shopping bags.

The videos started out by showing the static norm that belonged to the appointed condition. The photos and animation appeared, after which the text did as well. A voiceover read the text out loud. When the voiceover was finished, the video was still for two seconds, after which the text changed into that of the appointed dynamic condition with a fading effect and the photos changed into those of the appointed dynamic condition with a slide effect. Then, the voiceover came back to read the new text out loud. When the voiceover of the dynamic norm was finished, the animation started playing to show the change that was just explained in the voiceover.

An overview of the video frames and their contents can be found below in table 3. The larger figures of the separate frames can be found in Appendix A.

The stimuli used for the experiment consisted of twelve "webshop" pages, each showing nine items of clothing. Each participant could choose whether they wanted to shop for male or female clothes. For each choice, six of the webshop pages were shown, with each page showing six items of the same clothing category. The categories were similar for the male and female versions, but differed slightly as some categories were not available for men (skirts and dresses) or were named differently ("blouses" for women were called "shirts" for men, and were there was a "t-shirts and tops" category for women, this was simply "t-shirts" for men). The categories for the female webshop pages were: 1) dresses, 2) jeans, 3) blouses, 4) skirts, 5) jumpers and cardigans, and 6) t-shirts and tops. The categories for the male webshop pages were: 1) sweaters, 2) jeans, 3) shirts, 4) trousers, 5) jumpers and cardigans, and 6) t-shirts. There was also an extra page of clothing for later on in the experiment for both genders, these pages both contained one item of each of the six categories.

The clothing items were chosen from the big clothing webshop Zalando.nl (2023). They were selected to show a certain variety of styles, but to also not be too out there that only a couple of people would

Table 3: Details per video frame for each norm condition

	Static norm		Dynamic norm	
	Sustainable	**Unsustainable**	**Sustainable**	**Unsustainable**
Video frame				
Text	Recent research has shown that currently 80% of consumers make an effort to limit the amount of clothes they buy, purchasing only the clothes they need.	Recent research has shown that currently 80% of consumers do not make an effort to limit the amount of clothes they buy, purchasing more clothes than they need.	But /and they are changing their behaviour; more and more consumers are engaging in sufficient consumption, purchasing less clothes than before and only what they really need.	But /and they are changing their behaviour; more and more consumers are engaging in over-consumption, purchasing more clothes than before and more than they really need.
Text colour	Green	Red	Green	Red
Animation frame				
Animation numbers — Items in closet	29	35	15	49
Animation numbers — Number of people	2	2	3	3
Animation numbers — Number of shopping bags	2, 2	2, 3	1, 1, 1	3, 5, 5
Photo 1				
Photo 2				

like them. The clothing items on each page were shown with a photo were a model was wearing the item, but without their head showing. Each photo was accompanied by the title and price of the item as shown on the Zalando website. The full set of webshop pages can be found in Appendix B.

3.3 Procedure

The study was conducted in a computer room located in the faculty of Industrial Design Engineering at Delft University of Technology. Upon entering the lab, participants were asked to sit down at a computer and watch the video that would come on screen in full screen and wearing the headphones provided on the table. The study entirely took place through a Qualtrics questionnaire. Before starting with the study, participants were required to read and agree to the informed consent incorporated into the Qualtrics questionnaire. Afterwards, the participants were randomly assigned to one of the four conditions in a two-by-two between-subject design. In each condition, participants were first asked to watch the video that belonged to their randomised condition.

After watching the video, to gain preliminary insights on how the manipulation videos affected the participants, they were asked to indicate what emotions they felt while watching the video. They were measured using a relevant selection of the PrEmo instrument cartoon characters (Desmet, 2019) with the following prompt: *"Please state the extent to which you feel the following emotions, after watching the video. You can go back to re-watch it, if you need."* There were three positive emotions measured: 1) satisfaction, 2) pride and 3) hope; and three negative emotions: 4) anger, 5) shame and 6) aversion. They were measured on a 7-point scale (1 = Does not describe my feelings, 7 = Clearly describes my feelings). Following this was an open ended question, stating: *"Please describe here why you feel these emotions and all those impressions, thoughts, and feelings, that you may have after watching the video. You can go back to re-watch the video, if needed. Please describe them in as much detail as possible."* This question served to make the manipulation stronger and to let participants explain why they felt the previously indicated emotions, along with any thoughts or impressions that arose while watching the video.

Following the emotions questions, was the shopping part of the survey. Participants were presented with the following prompt: *"Please imagine that you have an **upcoming event** (a party, a job interview, a normal day etc..) and you are interested in new clothes. You will be presented with **6 pages of clothes** (for example, one page with jeans, one with shirts etc..). Shop like you would normally do and just choose what you like from the following assortment, with no budget restrictions. You can always go back to the previous page."* They were told to shop as normal, but with a specific event in mind so that they had a goal. To make sure they would not let their financial situation influence their decision making, it was stated that there were no budget restrictions. After this prompt, the participants were asked whether they wanted to shop in the men's or women's section: *"First, please choose whether you would like to shop in the men's or women's section."* with the options being 1) men and 2) women. Afterwards, the clothing pages corresponding with their gender choice were shown in an image (as can be seen in Appendix B), on which they could click on any item to add it to their basket. Above the image was the prompt: *"Please look at these clothes and select all the items you would like to add to your cart."*. Every item selected was recorded as a main measurement of sustainable behaviour (with less items being selected being more sustainable than selecting more items). The time the participant spent on the product page was also recorded, to see whether the manipulation had an effect on how long they would think about their choices. When the participants finished shopping, the message *"Thank you for your shopping! If you want to re-evaluate your choices, you can go back to previous pages. Otherwise please continue to the next page."* was shown.

To evaluate whether the manipulation might trigger any other (un)sustainable behaviour, there was a question about possible donation after the shopping section. The participants were told that they had €50 leftover, regardless of what items they added to their basket. They were then asked whether they wanted to donate (some of) the rest of their budget, or keep it to buy more items with: *"Now, imagine that you still have €50 left of your budget. You can either use this money to continue shopping, or donate it to WWF; a non-profit organization that fights for conservation of nature and the environment. Would you like to donate the money, or use it to continue shopping?"*. The charity WWF was chosen as this is one of the most famous charities that is committed to sustainability, and it would probably be known by all

participants regardless of where they came from. The two options were 1) *I want to donate the money or part of it*, or 2) *I want to spend them to continue shopping*. When selecting the first, the participant could select how much of the €50 they wanted to donate on a slider: *"How much of the money would you like to donate?"*. If the second option was selected, they were taken to the extra clothing page, corresponding to the earlier selected gender. The page showed six new clothing items in a similar way as the previous shopping pages (which can be seen in Appendix B) with the text *"You can choose up to two more items to use your leftover budget, or press "next" to continue."*. Following, was an open ended question where the participants could indicate how they felt while shopping, to see whether their feelings about the video stuck around or changed during the shopping process: *"Please describe here how you felt while shopping."*.

To have another measure of how the manipulation influenced consumption behaviour, participants were asked to rate two statements on a 7-point scale: *"Please think back about the video you watched at the beginning and rate the following two statements. I think that the video..."* 1) *"Encouraged me to buy"*(1 = many items, 7 = few items) and 2) *"Triggered me to buy…"* (1 = much more than needed, 7 = just as needed). Afterwards, the participants were shown a thank-you message: *"Thank you for using our webshop! Now, we want to ask you a few more questions."*

Next, to control possible covariates, participants were asked to rate their usual shopping behaviour and environmental concern. For usual shopping behaviour, a revised version of Edwards Compulsive Buying Scale was used (Edwards, 1993). This is an instrument that measures how compulsive an individual's usual buying behaviour is (Maráz et al., 2015), and can therefore be used to get an insight into if that individual overconsumes in their daily life. The revised version of the scale includes eight items: *1) I feel driven to shop and spend, even when I don't have the time or the money; 2) I tend to shop excessively; 3) I go on a buying binge when I'm upset, disappointed, depressed, or angry; 4) I buy things I don't need or won't use; 5) I sometimes feel the need to go shopping 6) I get little or no pleasure from shopping; 7) I hate to go shopping;* and *8) I feel guilty or ashamed after I go on a buying binge or buy excessively.* The items were rated on a seven-point Likert scale (1 = strongly disagree, 7 = strongly agree). To measure environmental concern, a three item scale from Cervellon (2012) was used, since this is a

relatively short instrument. The instrument shows the following three items: 1) *I normally make a conscious effort to limit my use of products that are made of scarce resources*, 2) *I have switched products for ecological reasons*, 3) *When I have a choice between two equal products, I always purchase the one that is less harmful to other people and the environment*. The items were shown with a seven-point Likert scale (1 = strongly disagree, 7 = strongly agree).

Following this, the participants were asked to fill in some demographic information, including age, gender (male, female, other or prefer not to say), and nationality. The study ended with a manipulation and attention check. The manipulation check was conducted to assess the effectiveness of the manipulation videos and consisted of four statements that participants were asked to rate on a 7-point scale: *"Now, think again about the video that you watched at the beginning and rate the following statements. I think that the video showed me that...".* Two of the statements were focused on the effectiveness of the static norms: 1) *"buying a lot has been traditionally..."* (1 = very normal to do, 7 = not normal at all) and 2) *"buying a lot has been traditionally..."* (1 = very accepted to do, 7 = not accepted at all); and two were for the dynamic norms: 3) *"buying a lot is becoming..."* (1 = more normal to do, 7 = less normal to do) and 4) *"buying a lot is becoming..."* (1 = more accepted to do, 7 = less accepted to do). Finally, for the attention checks, there was first an open question to check for the static norm: "The video mentioned the percentage of consumers who currently make an effort to buy less and only what they really need. Can you re-call this percentage? If so, please state it here.". Then, there was a multiple choice question to check for the dynamic norm: *"The video also mentioned another information. Which of the two information was included in the video? Please answer only if you remember, otherwise press next. The video stated that..."* 1) *consumers are becoming more sustainable, engaging more and more in sufficient consumption* or 2) *consumers are becoming less sustainable, engaging more and more in over-consumption*.

3.4 Analysis plan

Reliability analyses were conducted for the included scales of the covariates: usual shopping behaviour and environmental concern (alpha > .70 was considered as acceptable) (see Appendix D, table D.1 for the values). The means of the scales were taken to be used in the covariate analyses. For the covariates,

preliminary checks were conducted to ensure that there was no violation of the assumptions of normality, linearity, homogeneity of variances, homogeneity of regression slopes, and reliable measurement. To ensure that the possible effects of covariates were not caused by correlations between the covariates themselves, the relationships between usual shopping behaviour and age were investigated using the Spearman correlation coefficient (see Appendix D, table D.2 for the values).

The manipulation check was split up into the check of the static norm and the check of the dynamic norm, each with its two corresponding items. For both checks, a reliability analyses was conducted for the scale used (alpha > .70 was considered as acceptable). Afterwards, the mean of the two items of the scale was taken, so that there was one value for the static norm manipulation check and one for the dynamic norm manipulation check. To evaluate the effectiveness of the static and dynamic norm manipulations, two independent samples t-tests were conducted.

The clothing items the participants selected were originally shown in a binary way, with one variable for each item and a 0 if not selected, and a 1 if selected. To be able to use this data in analysis, all these values were added up to make one variable for number of selected items. Analysis of the distribution of the data showed it to be positively skewed. To solve this, the data was transformed using a square root, which resulted in a more normal distribution. An analysis of covariance (ANCOVA) was then performed to test the main and interaction effects of the static and dynamic norms on the number of items selected. The covariates taken into account were usual shopping behaviour, environmental concern and age. If a covariate had no significant effect, it was removed from the analysis.

For the time spent on product pages, the mean of the time spent on each of the six pages was taken to obtain one variable. Analysis of the distribution of the data showed it to be peaked and positively skewed. To solve this, the data was transformed using a logarithm, which resulted in a more normal distribution. An ANCOVA was then performed to test the main and interaction effects of the static and dynamic norms on the number of items selected. The covariates taken into account were usual shopping behaviour, environmental concern and age. If a covariate had no significant effect, it was removed from the analysis.

To assess what participants in the different conditions decided to do with the "leftover budget", or, what their donation intention was, comparative analysis was conducted using crosstabs to compare the frequencies of the choice for either donation or continuing shopping. Chi-square tests were used to assess significant differences. For the amount of money donated, a square root was used to make the data more evenly distributed. An analysis of variance (ANOVA) was then performed to test the main and interaction effect of the static and dynamic norms on the amount of money donated. When choosing to continue shopping, the extra number of items selected was added to the amount of selected items in the original product pages. Similarly to the regular amount of items selected, a square root was used to transform the data to make it more evenly distributed. An ANCOVA was then performed to test the main and interaction effect of the static and dynamic norms on the total number of items selected. The covariates taken into account were usual shopping behaviour, environmental concern and age. If a covariate had no significant effect, it was removed from the analysis.

For the two-item consumption scale spent on product pages, the mean of the two items was taken to obtain one variable. An ANCOVA was then performed to test the main and interaction effects of the static and dynamic norms on the consumption scale. The covariates taken into account were usual shopping behaviour, environmental concern and age. If a covariate had no significant effect, it was removed from the analysis.

For the number of items, time spent on product pages, donation amount, total number of items selected and the two-item consumption scale, follow up analyses where older participants (older than 30 years old) were excluded were conducted. Because the clothing items were selected with a young adult audience in mind, it was expected that the age of the participants might influence their consumption behaviour. Therefore, these extra analyses were conducted, to see whether there actually was a difference between the results with and without the age limit.

The emotions recorded with the PrEmo tool (Desmet, 2019) were divided into two categories: positive emotions (satisfaction, pride and hope) and negative emotions (anger, shame and aversion). For both categories, the mean of the three emotions in it was computed to use as one variable. Reliability analyses were conducted for these emotion scales (alpha > .70 was considered as acceptable) (see Appendix D,

table D.1 for the values). Two ANOVAs were then performed to test the main and interaction effects of the static and dynamic norms on the positive and negative emotions. The separate emotions were also analysed with ANOVAs. To see whether the emotions acted as mediators between the framing of the static and dynamic norms, and the number of items selected, Hayes' PROCESS macro (Model 7) (Hayes, 2012) in was utilized, with the positive and negative emotions as separate mediators. The independent variable was the static norm, the dependent variable was the (transformed) number of items chosen, the dynamic norm acted as the mediator.

Lastly, responses for the open-ended questions on thoughts elicited by the manipulation video and the shopping experience were coded to identify common themes. Three themes, each with a couple of codes underneath them, were identified: 1) comments on the experiment setup, 2) comments on whether or not the participant thought about behaving sustainably (or, sustainable intention) and 3) comments on how conscious they already are in their consumption behaviour. The first theme, on the experiment setup, was not used in analysis but purely for experiment reflection and as an inspiration for future research. The third theme was very similar to the covariate of usual shopping behaviour and was therefore omitted. Therefore, the focus of the analysis was on the second theme. This theme, sustainable intention, included the codes: 1) *buying clothes they need* (sustainable behaviour, e.g. when participants mentioned that they only selected items that they really needed); 2) *sustainable intention* (sustainable behaviour, when participants mentioned they were consciously trying to make a sustainable choice, e.g. when participants mentioned they did not want to buy items because they did not know what the quality was); 3) *awareness* (sustainable behaviour, e.g. partipants that mentioned that the manipulation made them more aware of what and how many items they selected); 4) *buying clothes they do not need* (unsustainable behaviour, e.g. when participants mentioned that they added items that they have no need for); 5) *buying too much* (unsustainable behaviour, e.g. when participants mentioned that they felt like they selected too many items); and 6) *disregard sustainability* (unsustainable behaviour, e.g. when participants mentioned they added anything they liked and did not think about it too much). These six codes were then split into two variables to be able to analyse them: 1) *sustainable behaviour* and 2) *unsustainable behaviour*. A code-book was created, including the codes from the sustainable intention

theme and the other themes, this code book can be found in Table C.1 until C.3 in Appendix C. If respondents mentioned more than one thought related to the same code, this was counted only once. Frequencies of each code were analysed through a Chi-square test, as to see whether the conditions had an effect on the mention of sustainable behaviour. This was done in case participants intended to act sustainably but did not actually do so, which would make the analysis of this sustainable intention and the measured behaviour provide different results.

4. Results

An overview of the mean and standard deviation of the dependent variables (number of items selected, time spent on product pages, donation amount and total number of items selected) per condition can be found in table 4.

Table 4: Mean and standard deviation of dependent variables per condition

	Number of items		Average time spent on product pages (in sec.)		Donation (amount in €)		Total number of items (including extra items)		N
	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	
1 Sustainable static, sustainable dynamic	8.79	5.81	17.38	7.09	15.81	9.94	9.29	5.96	66
2 Sustainable static, unsustainable dynamic	8.50	5.26	18.02	7.33	19.00	16.23	9.03	5.43	70
3 Unsustainable static, sustainable dynamic	9.27	4.78	16.98	7.98	21.45	15.98	9.88	5.06	67
4 Unsustainable static, unsustainable dynamic	7.21	3.96	17.58	6.58	21.35	15.98	7.68	4.12	68
Total	8.44	5.03	17.50	7.23	19.17	14.32	8.96	5.22	271

The scales for usual shopping behaviour and environmental concern were considered reliable, since Cronbach's alpha > .70 (see Table D.1). The Pearson correlations between the three covariates (usual shopping behaviour, environmental concern and age) were all < .29 (see Table D.2) and therefore considered small according to the guidelines by Cohen (1988).

4.1 Manipulation checks

For both the static and dynamic manipulation checks, independent-samples t-tests were conducted. For the static norm, a significant difference was found in the scores between the two conditions, with participants that were shown the sustainable static norm rating buying a lot to be, traditionally, less normal and accepted (M = 4.14, SD = 1.46) than those who were shown the unsustainable static norm (M = 3.13, SD = 1.13; t(269) = 6.35, p < .005, two-tailed). Similarly, for the dynamic norm, a significant difference was found in the scores between the two conditions, with participants that were shown the sustainable dynamic norm rating buying a lot to be becoming less normal and accepted (M = 5.05, SD = 1.13) than those who were shown the unsustainable static norm (M = 3.93, SD = 1.21; t(269) = 7.90, p < .005, two-tailed).

4.2 Effect of sustainability framing on number of items bought

To test H1, H2 and H3, on the effect of different combinations of (un)sustainably framed static and dynamic norms on sufficient consumption, a 2x2 between-subjects analysis of covariance (ANCOVA) was conducted to assess the effectiveness of the sustainable framing of a combination of a static and dynamic norm on the number of items bought. Environmental concern, usual shopping behaviour and age were used as covariates to control for individual differences. As environmental concern did not prove significant, it was removed from the analysis. Regarding the number of items bought, the ANCOVA showed a marginally significant interaction effect between the sustainability framing of the static and dynamic norms (F (1, 265) = 3.49, p = .063, part. η^2 = .01). Neither of the main effects were statistically significant, with the static norm: F (1, 265) = 0.04, p = .83; and dynamic: F(1,265) = 2.30, p = .13. Simple effect tests, while keeping in mind that the interaction effect was only marginally significant, showed further that an unsustainable static norm resulted in less items bought when combined with a matching unsustainable dynamic norm (M = 2.59, SD = .10) than when combined with a mismatching sustainable dynamic norm (M = 2.94, SD = .10; F(1, 265) = 5.71, p = .018, part. η^2 = .021), the original values, before transforming the data, can be found in Figure 2. This means that H1, that stated that a mismatch in sustainability framing would be more effective than a matching sustainability framing, is not supported. The other combinations did not reveal any significant effects

(all p > .05). Therefore, H2 and H3 (which hypothesised that condition 3 would be more effective than condition 2, and that condition 1 would be more effective than condition 4 respectively) are also not supported. Two of the covariates were significant, usual shopping behaviour: $F (1, 264) = 6.26$, $p = .013$, part. $\eta^2 = .023$; and age: $F (1, 264) = 6.11$, $p = .014$, part. $\eta^2 = .023$.
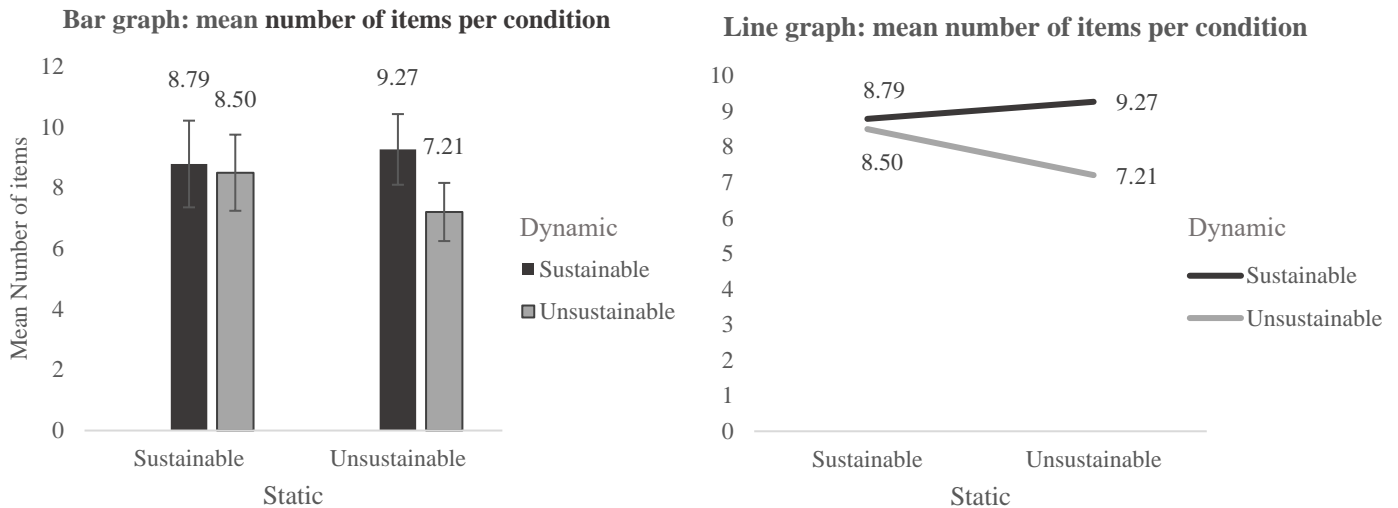
Figure 2: Bar and line graphs for the mean number of items per condition

Given the lack of significant effects of the static and dynamic norms and their interaction on the number of items bought, and the significance of age as a covariate, a follow up analysis where older participants were excluded was conducted. This was done as the ages of the participants varied widely from 18 to 60, with a mean of 22.86, causing the age data to a high kurtosis of 16.80. When removing all participants older than 30 from the data, which included 14 participants, the kurtosis lowered to .33. This adjusted data was used for another ANCOVA, with usual shopping behaviour as a covariate ($F (1, 252) = 11.26$, $p = .001$, part. $\eta^2 = .043$). This showed a significant main effect of the sustainability framing of the dynamic norm on the number of items selected ($F(1, 252) = 4.65$, $p = .032$, part. $\eta^2 = .018$). Participants selected more items when they were shown a sustainable dynamic norm ($M = 2.92$, $SD = .89$), than when they were shown an unsustainable dynamic norm ($M = 2.68$, $SD = .84$) (see original values, before transformation of the data, in Figure 3). No significant main effect of the sustainability framing of the static norm was observed ($p = .73$) nor of the interaction ($p = .19$).

Number of items bought in the sustainable vs unsustainable framing (with participants > 30yo removed)
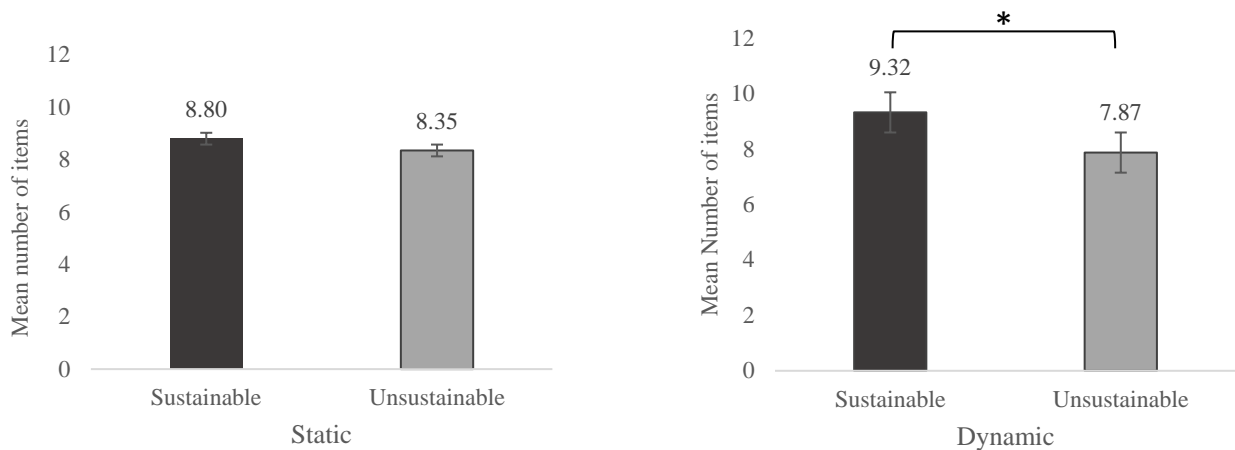
Figure 3: Effect of sustainability framing for the static and dynamic norm on number of items bought. Columns with asterisk show significant difference between conditions at p<.05. Error bars indicate 95% confidence interval.

4.3 Effect of sustainability framing on time spent on product pages

To further test H1, H2 and H3, a similar ANCOVA to that of for the number of items was performed for the average time spent on product pages. However, non of the covariates were significant, so they were removed from the analysis to continue with a regular two-way between subjects ANOVA. The ANOVA showed no significant interaction effect ($F_{(1, 267)} = .17$, $p = .68$), nor was there a significant main effect of the time spent on the product pages of the sustainable framing of either the static ($F_{(1, 267)} = .17$, $p = .68$) or dynamic norm ($F_{(1, 267)} = .97$, $p = .33$). Removing the participants aged over 30 did not provide more significant results. This, again, means that H1, H2 and H3 can not be supported.

4.4 Effect of sustainability framing on donation intention

To see whether the sustainability framing of static and dynamic norms influenced other sustainable behaviour, namely donation intention, and to further test H1, H2 and H3 a Chi-square test for independence was performed on whether participants chose to donate the leftover budget or to use it to continue shopping. The test indicated no significant association between manipulation condition and the donation intention, $\chi^2 (3, n = 271) = .84$, $p = .84$, phi = .06.

Regarding the amount of money that the people that chose for donation decided to donate, a two-way between subjects ANOVA showed no significant interaction effect of the static and dynamic norms on the amount of money donated ($F_{(1, 124)} = .26$, $p = .61$). There was also no significant main effect found

on the amount of money donated of the sustainable framing of either the static $(F(1, 124) = 2.08, p = .15)$ or dynamic norm $(F(1, 124) = .23, p = .63)$. Both for the donation intention and the amount of money donated, removing participants older than 30 did not provide more significant results.

Regarding the total amount of items (the extra selected items added to the original selected items), a two-way between subjects ANCOVA showed no significant main effect on the number of items selected from the sustainable framing of either the static $(F(1, 271) = .05, p = .82)$ or dynamic norm $(F(1, 271), p = .08)$. There was a marginally significant interaction effect found between the sustainability framing of the static and dynamic norms on the number of items bought $(F(1, 271) = 3.60, p = .059, \text{part. } \eta^2 = .01)$. Simple effect tests showed further, that, keeping the solely marginally significance in mind, an unsustainable static norm resulted in less total items bought when combined with a matching unsustainable dynamic norm $(M = 2.67, SD = .10)$ than when combined with a mismatching sustainable dynamic norm $(M = 3.03, SD = .11; F(1, 265) = 5.89, p = .016, \text{part. } \eta^2 = .022)$. The other combinations did not reveal any significant effects (all $p > .05$). Environmental concern was removed from the analysis for insignificance, usual shopping behaviour $(F (1, 265) = 8.55, p = .004)$ and age $(F (1, 265) = 6.17, p = .014)$ did have a significant effect. When performing the same analysis with the data where participants older than 30 were removed (with usual shopping behaviour as a covariate $(F (1, 252) = 13.24, p < .005, \text{part. } \eta^2 = .05)$), similar results to those of the number of items without the extra items showed. It showed a significant main effect of the sustainability framing of the dynamic norm on the number of items selected $(F(1, 252) = 4.79, p = .029, \text{part. } \eta^2 = .019)$. Participants selected more items when they were shown a sustainable dynamic norm $(M = 3.01, SD = .90)$, than when they were shown an unsustainable dynamic norm $(M = 2.77, SD = .85)$ No significant main effect of the sustainability framing of the static norm was observed $(p = .74)$ nor of the interaction $(p = .18)$.

4.5 Effect of sustainability framing on consumption scale

For the two item consumption scale, a similar ANCOVA to that of for the number of items was performed. As environmental concern did not prove significant, it was removed from the analysis. The ANCOVA showed a marginally significant interaction effect between the sustainability framing of the static and dynamic norms $(F (1, 265) = 3.00, p = .084, \text{part. } \eta^2 = .01)$. Neither of the main effects were

statistically significant, with the static norm: $F (1, 265) = 0.28$, $p = .60$; and dynamic: $F(1,265) = 0.94$, $p = .33$. Simple effect tests provided no significant result. Two of the covariates were significant, usual shopping behaviour: $F (1, 265) = 18.73$, $p < .005$, part. $\eta^2 = .066$; and age: $F (1, 265) = 6.10$, $p = .014$, part. $\eta^2 = .023$. Removing participants older than 30 did not provide more significant results

4.6 Emotions elicited by video

A two-way between subjects ANOVA was conducted for both the means of the positive emotions (satisfaction, pride and hope) and the negative emotions (anger, shame and aversion) to explore the possible influence of the sustainable framing of the static and dynamic norm on the participants' emotions. The result of the two-way ANOVA found no significant interaction effect for the positive emotions ($F (1, 267) = .07$, $p = .79$). Both main effects were significant. With the static norm ($F (1, 267) = 6.52$, $p = .011$), part. $\eta^2 = .02$) showing a lower mean of positive emotions when unsustainable ($M = 3.18$, $SD = .09$) than when sustainable ($M = 3.51$, $SD = .09$). The dynamic norm ($F (1,267) = 211.34$, $p < .005$, part. $\eta^2 = .44$), similarly, also resulted in a lower mean of positive emotions when unsustainable ($M = 2.4$, $SD = .09$) than when sustainable ($M = 4.28$, $SD = .09$). These values are graphically shown in Figure 4.

Mean of positive emotions in the sustainable vs unsustainable framing
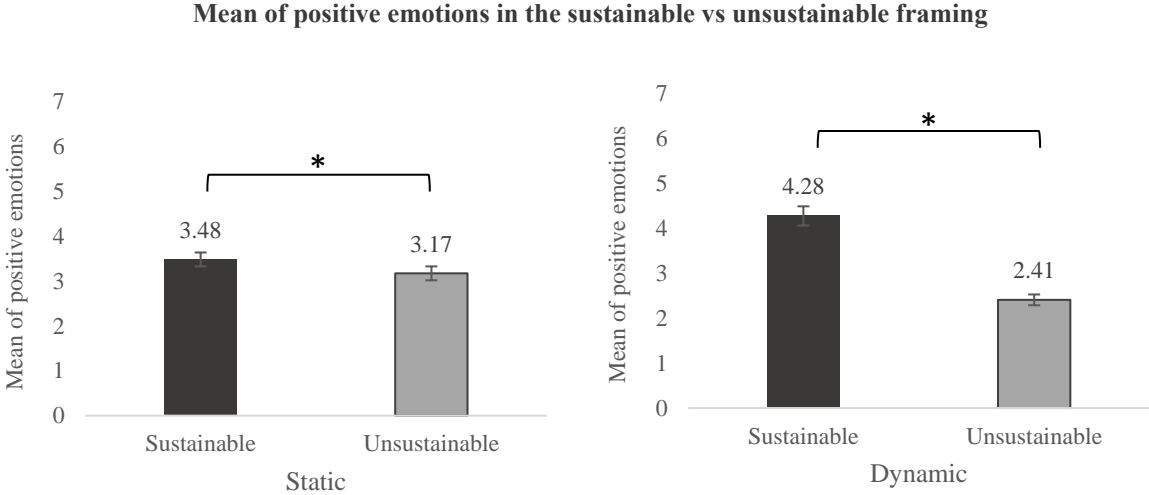
Figure 4: Effect of sustainability framing for the static and dynamic norm on mean of positive emotion. Columns with asterisk show significant difference between conditions at p<.05. Error bars indicate 95% confidence interval.

For the mean of the negative emotions, there was a significant interaction effect between the sustainability framing of the static and dynamic norms ($F (1, 267) = 4.23$, $p < .005$, part. $\eta^2 = .02$).

Simple effect tests showed further that an unsustainable static norm resulted in a higher mean of negative emotions when combined with a matching unsustainable dynamic norm (M = 3.75, SD = .14) than when combined with a mismatching sustainable dynamic norm (M = 2.81, SD = .15; $F(1, 267) = 21.01$, $p < .005$, part. $\eta^2 = .17$). The sustainable static norm resulted in a lower mean of negative emotions when combined with a matching sustainable dynamic norm (M = 2.00, SD = .15) than when combined with a mismatching unsustainable dynamic norm (M = 3.53, SD = .14; $F(1, 267) = 56,42$, $p < .005$, part. $\eta^2 = .17$). The sustainable dynamic norm resulted in a lower mean of negative emotions when combined with a matching sustainable static norm (M = 1.95, SD = .15) than when combined with a mismatching unsustainable static norm (M = 2.81, SD = .15; $F(1, 267) = 15.63$, $p < .005$, part. $\eta^2 = .06$). The combinations with the unsustainable dynamic norm did not prove significant. The emotions were also analysed separately, a two-way between subjects ANOVA was conducted for all six of the emotions listed in the survey, the results of these analyses can be found in Appendix D, Table D.2. In general, the separate emotions provided the same results (significant main effects for the positive emotions, significant interaction effects for the negative emotions). However, only aversion differed, as here the two main effects were significant as opposed to the interaction effect.
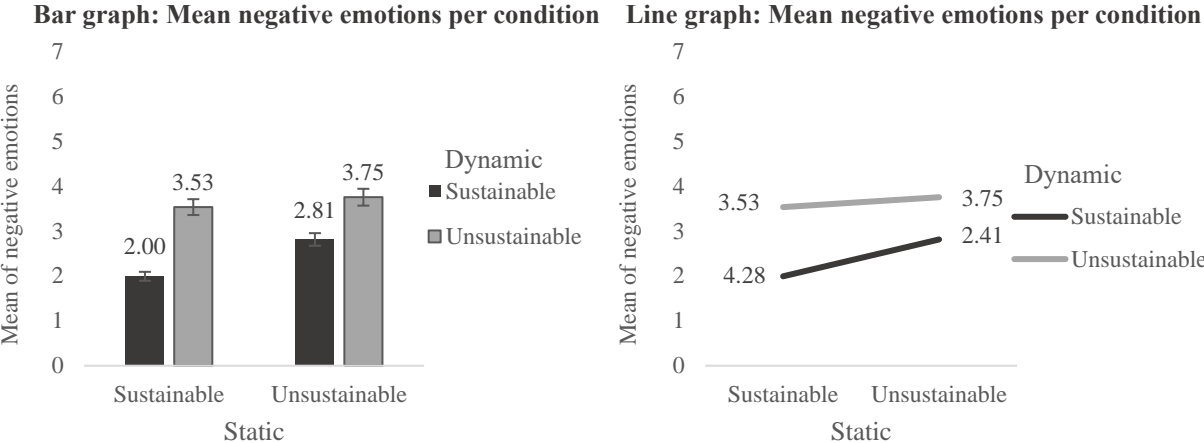
Figure 5: Bar and line graphs for the mean negative emotions per condition

4.7 Emotions as mediator

To test H4, that states that emotions can be a mediator between the role of the static norms, dynamic norms and sufficient consumption, moderated mediation regression analyses were conducted utilizing Hayes' PROCESS (Model 7) (Hayes, 2012). First, the mediation between the sustainability framing of

the static norm and the number of items selected was investigated, with the framing of the dynamic norm as a moderator variable and positive emotions as the mediator (Figure 6). The regression model for positive emotions (M) indicated that the static norm did not have a significant effect ($b = -.22$, $SE = .41$, $t = -.55$, $p = .58$) on the level of positive emotions experienced by the participants. However, the dynamic norm did have a significant effect ($b = -1.77$, $SE = .41$, $t = -4.34$, $p < .005$) on the positive emotions. Besides, the interaction effect between the static and dynamic norms was not significant ($b = -.07$, $SE = .26$, $t = -.27$, $p = .79$). The regression model for the number of items selected (Y) showed no significant effect of the static norm (X) on the number of items ($b = .00$, $SE = .11$, $t = .04$, $p = .97$), but did reveal a significant effect of positive emotions (M) on the number of items ($b = .10$, $SE = .04$, $t = 2.60$, $p = .01$). For the conditional indirect effects, there was no significant effect of the static norm on the number of items for either the sustainable dynamic norm ($b = -.03$, CI [-.08, .01]) or the unsustainable dynamic norm ($b = -.04$, CI [-.09, .00]). The moderation of the mediation effect of positive emotions by the dynamic norm, was not significant ($b = -.01$, CI [-.07, .05]).
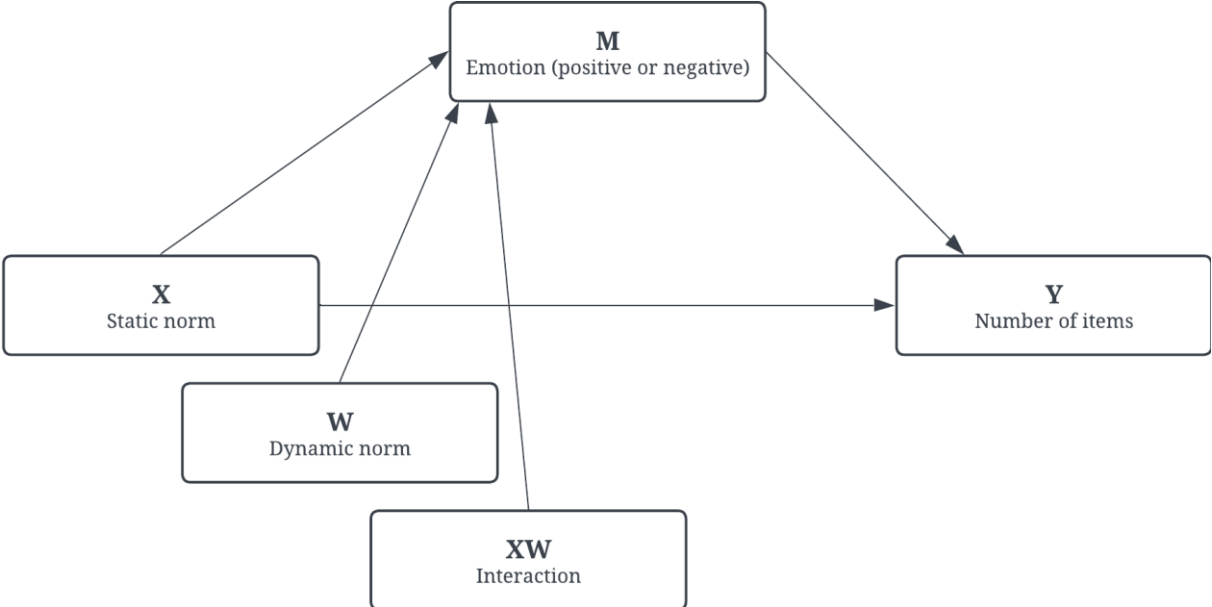
Figure 6: Statistical moderated mediation regression model (using PROCESS Model 7)

Secondly, the mediation between the sustainability framing of the static norm and the number of items selected was investigated, with the framing of the dynamic norm as a moderator variable and negative emotions as the mediator. The regression model for negative emotions (M) indicated that the static norm

had a significant effect (b = 1.41, SE = .46, t = 3.07, p = .002) on the level of negative emotions experienced by the participants. The dynamic norm also had a significant effect (b = 2.13, SE = .46, t = 4.66, p < .005) on the negative emotions. Besides, the interaction effect between the static and dynamic norms was also significant (b = -.59, SE = .29, t = -2.06, p = .04). The regression model for the number of items selected (Y) showed no significant effect of the static norm (X) on the number of items (b = -.03, SE = .11, t = -.29, p = .77), or the negative emotions (M) (b = .01, SE = .04, t = .30, p = .77). For the conditional indirect effects, there was no significant effect of the static norm on the number of items for either the sustainable dynamic norm (b = .01, CI [-.05, .08]) or the unsustainable dynamic norm (b = .00, CI [-.02, .03]). The moderation of the mediation effect of negative emotions by the dynamic norm, was not significant (b = -.01, CI [-.06, .04]). These values indicate that H4 is unsupported.

4.8 Thoughts listing question analysis

To further investigate H1, H2 and H3 and to see whether the different conditions had effect on the mention of sustainable behaviour a Chi-square test was performed. The Chi-square test for independence indicated no significant association between manipulation condition and the mention of sustainable behaviour, χ^2 (3, n = 271) = .81, p = .85, phi = .06. Similarly, a Chi-square test for independence indicated no significant association between manipulation condition and the mention of unsustainable behaviour, χ^2 (3, n = 271) = 2.41, p = .49, phi = .09.

5. Discussion

This thesis aimed to investigate the effects of combining a static with a dynamic to reduce overconsumption and answer the question "How does the presentation of a combination of static and dynamic norms in design interventions trigger a stop and re-think process in consumers' minds and help to reduce overconsumption?". Despite careful setup and analysis of the experiment, the present study provided almost no significant results for any of the hypothesised relations.

 The manipulation check suggested a successful manipulation of the perceived social sustainability norm through the manipulation videos. Still, the measures of the independent variables, number of items, time spent on product pages and donation intention, were not found to be significantly different between

conditions. This implies that manipulating the perceived social sustainability norm is not an effective way to influence sustainable behaviour and, in particular, reduce overconsumption.

However, while time spent on the product pages and donation intention were additional ways to measure possible sustainable behaviour, the primary focus of this thesis was the number of items selected, as this provided the clearest measurement for the level of consumption. With this, a marginally significant interaction effect was found between the static and dynamic norms. So, although no firm conclusions can be drawn from this, this could imply a trend towards a potential effect of the combination of a static and dynamic norm on the amount of consumption.

Interestingly, only the unsustainable static norm showed a significant difference between its combination with a sustainable or unsustainable dynamic norm. Besides, it showed that it was most effective, since it resulted in the fewest items selected, when combined with a matching unsustainable framing (M = 7.21), as opposed to when combined with a mismatching sustainable framing (M = 9.27). This, partly contradicts H1, as it was hypothesised that a mismatching framing would be more effective than a matching framing. This might be because social moral licensing, where people behave immorally because they feel they do not have to behave morally since other people are already doing so (Lasarov et al., 2022), as explained in paragraph 2.3, plays a bigger role than previously thought. It could be that when people see the shift happening from an unsustainable static norm towards a sustainable dynamic norm, that they do not feel the need to make this shift themselves anymore and therefore do not behave sustainably. Another perspective could be that, when people see double evidence of an unsustainable norm, they want to compensate for this by behaving sustainably themselves. In this case, a matching unsustainable framing would be the most effective in getting consumers to behave more sustainably. However, it is worth repeating that this is all based on a marginally significant result and more research is needed to prove this theory. Besides, H1 stated that both a matching unsustainable framing and a matching sustainable framing would be more effective than either combination with a mismatch in framing (unsustainable static + sustainable dynamic or sustainable static + unsustainable dynamic). Because only the combinations with the unsustainable static norm proved significant, H1 can not be entirely disproved, as it is still unclear whether a matching sustainable framing is also more or less

effective than a mismatching framing. Next to that, since no combinations with a sustainable static norm proved significant, we are unable to prove both H2 and H3. However, when purely looking at the mean of the selected items per condition, condition 4 (unsustainable static + unsustainable dynamic) was the most effective in reducing consumption (M = 7.21), thus disproving H3 and condition 3 (unsustainable static + sustainable dynamic) was the least effective (M = 9.27), thus disproving H2. However, more research is needed to prove this.

The emotions question did provide significant results. Here, it was shown that the combination of the static and dynamic norm did not matter in influencing the positive emotions, as only the main effects were significant. This meant that a sustainable norm, whether it is static or dynamic, triggers more positive emotions than an unsustainable norm. For the negative emotions the interaction between the static and dynamic norm was significant, indicating that the different combinations of static and dynamic norms had varying effects on participants' emotional responses. Notably, negative emotions were least prevalent when matching sustainable norms were presented (M = 4.28). Conversely, the highest ratings of negative emotions were reported when two unsustainable norms were displayed (M = 3.75). There was no significant difference between when an unsustainable dynamic norm was combined with a sustainable or unsustainable static norm, but both of these pairings resulted in the highest mean ratings of negative emotions (with M = 3.53 and M = 3.75 respectively). This shows that the presence of an unsustainable norm induces more negative emotions, which grow even stronger when both norms are unsustainably framed. This might also explain why the combination of matching unsustainable norms was more effective in reducing the selected items than a mismatching framing: the unsustainable norms evoked more negative emotions than the positive ones, maybe causing people to wanting to contradict the behaviour. This aligns with the second perspective previously given, which suggested that people may act more sustainably when shown that unsustainable behaviour is the norm because they want to compensate.

As the sustainability framing of the static and dynamic norms showed several significant effects on the emotions that the participants indicated they felt after watching the intervention video, it was investigated whether these emotions had a mediating role in how many items the participants selected.

However, even though it was clear that the framing of the norms influenced the different emotions, the mediating effects of those emotions did not prove significant on the number of items selected. Therefore, H4 can not be accepted.

5.1 Theoretical implications

The contents of this thesis can contribute to research in environmental psychology, consumer behaviour and marketing. As far as I know, this is the first research that addresses the use of a combination of a static and dynamic norm to influence behaviour, let alone one with a focus on over- and sufficient consumption behaviour. Social norm theory seems to be quite a new but promising direction in influencing consumer behaviour. This research was inspired by and tried to build upon previous research on how social norms can change behaviour (Kim & Seock, 2019), norm based nudging (Nisa et al., 2017) and, specifically, the effects of static and dynamic norms (Sparkman & Walton, 2017; Loschelder et al., 2019). Where both Sparkman & Walton (2017) and Loschelder et al. (2019) have shown that the dynamic norm is often stronger in influencing behaviour than the static norm, this research aimed to explore what combining the two would do. The marginally significant interaction effect implies that there might be a difference between the different sustainability framings of the static and dynamic norms, but to definitively prove this, more research is required, even as for determining which combinations would be the most effective. However, the current results do imply that the combination of an unsustainable static norma with an unsustainable dynamic norm, is the most effective in reducing consumption. Most research on the effects of social norms on sustainable behaviour, found that displaying sustainable behaviour will make people follow this behaviour (Goldstein et al., 2008; Sparkman & Walton, 2017; Loschelder et al., 2019; Bohner & Schlüter, 2014; Dwyer et al., 2015; Kallgren et al., 2000; W. Schultz et al., 2008). There is little research on how showing an unsustainable norm influences behaviour, apart from the research in how a littered environment contributes to more littering (Ceschi et al., 2021), which contradicts the findings of the current study. Researching these unsustainable norms would therefore be interesting, especially since they correlate strongly with a high report of negative emotions. Guilt has previously been researched to be an emotion that makes consumers unable to rationalise away their responsibility (Antonetti & Maklan, 2014), this might clarify

how more unsustainable norms lead to more sustainable behaviour: when people see the double unsustainable norm, they experience guilt, making them want to contradict this shown behaviour. Furthermore, it has been previously found that positive emotions do not necessarily lead to more sustainable behaviour than negative ones (Wang & Wu, 2016), indicating again that this relationship between unsustainable norms, negative emotions and sustainable behaviour is an interesting area for further research.

Worth noting is that when the data was adjusted so that older participants were excluded, the results changed. Now, there was solely a significant main effect of difference between the framing of the dynamic norm, which might be in line with previous research on the stronger effect of dynamic norms versus static norms (Sparkman & Walton, 2017; Loschelder et al., 2019). Even in this case, the unsustainable framing proved more effective than the sustainable one. The difference in results might be because of the context of this research (which is further explored in section 5.3), but the relationship between social norms, age and sustainable behaviour might also be worth exploring further. Especially since social norms, and thus their interpretation, can differ between age groups. The present research can be seen as an explorative attempt to prove that there is an effect of combining static and dynamic norms.

5.2 Practical implications

As the climate crisis is becoming more dire, the need for sustainable consumer behaviour grows. Overconsumption plays a big role in the deterioration of the climate (Brown & Cameron, 2000) and it is therefore important that people start trying to limit their consumption. The consumption actions of individuals can influence the climate, but individuals are not responsible alone; organisations also have a moral obligation to try to reduce consumption (Fragnière, 2016). This research tried to find out whether displaying a combination of static and dynamic norms can be used to reduce consumption. Although companies need to keep making a profit in order to exist and can thus not fully discourage consumption, demarketing - marketing that discourages consumers from making purchases – is an upcoming trend (Reich & Armstrong Soule, 2016). The findings of the current study might be useful for marketeers and (communication) designers of companies that want to engage in demarketing. Besides, government

agencies, that are not focused on profit, might want to engage in campaigns promoting sufficient consumption. This could also be a useful application of the current research.

The results of the current thesis imply that a matching unsustainable norm is the most effective in reducing consumption behaviour. This would suggest that negative messaging is effective in getting people to perform the opposite, positive (or, in this case, sustainable) behaviour. Uses of these kinds of messages are already out there, for example with charity commercials asking people to donate, which prove to be just as or even more effective in eliciting donations than positively framed campaigns (Erlandsson et al., 2018). This way of messaging might also be effective in a sustainability context. The different combinations of (un)sustainably framed static and dynamic norms need to be researched further before this recommendation can be made with certainty, but when it can, it can be used to make stronger messages to influence consumer behaviour. Next to these results being used for reducing overconsumption, this norm combination could also have a use in other fields where sustainable behaviour needs to be triggered.

5.3 Limitations and further research

The current research presents some limitations that should be acknowledged. Firstly, as the research was part of a master's thesis, it had to be performed in quite a limited timeframe. This is why it was decided to test the consumption amount through a simulated webshop, even though more accurate effects might be found when researching consumers' behaviour in real life is observed. A recommendation for future research is therefore to see what the effect of a static and dynamic norm combination can be on real consumption behaviour. An example of how this can be done is by making the setting of the research as it was performed now, more realistic. Participants could be given a gift card of an actual webshop or physical store and be followed during their shopping process. When told in advance that they can also donate part of their budget, they can make a conscious decision whether to use the gifted money to purchase new items or donate it to a good cause. Another option is by following participants over a longer period of time. They could be asked to track their spendings over, for example a month, and then be exposed to the intervention. Afterwards, they would be asked to track their spendings in the same way as before, as to provide a clear indication of whether their consumption behaviour changed due to

the manipulation. This is especially interesting as the covariate usual shopping behaviour proved significant in almost all analyses and the participants' usual shopping behaviour is therefore a big influence on how they consumed during the experiment.

Next, the setup of the research also contained some elements that might have influenced the outcome, in which the thought listing task provided some insights. First, telling the participants that there were no budget limitations confused some of them, made them think that they had to spend a lot of money or made the simulated webshop seem less real for them. About 20% of participants (N = 55) mentioned that the price of the products or the lack of budget influenced their behaviour. One participant mentioned, for example, "*I was trying to make outfits in my head that I could potentially match and use, but because I did not have a budget restriction, I wanted to get the maximum amount of things and build outfits later.*". Perhaps stating that the participants do have a budget would change the outcome of the research completely, and this might therefore be an avenue worth exploring. With the proposed other research setups mentioned in the previous paragraph, people could be told they are given a real gift card, so that they act more like they usually would when shopping, or be actually spending their own money when followed over a longer period of time.

Second, the fact that the shopping prompt mentioned that they had one upcoming event that they wanted new clothes for, also restricted some participants in their behaviour. Some participants who otherwise might have bought more, now only bought one specific outfit. Some participants were also confused by the lack of a description of the event. For example, one participant wrote "*I didn't know what I was shopping for, so didn't really know what kinds of clothes I would want.*". Another wrote "*A bit confused, would I shop to wear one outfit? Why would I buy a dress and pants? Also do I have my current wardrobe, bc then I wouldn't buy something new.*". Perhaps stating they needed to shop for something where multiple outfits are needed (while still determining what would be a sufficient amount of items), for example a holiday, would give the participants more freedom to shop as usual. What goes hand in hand with this is that, because of the setup of the shopping pages and the prompt at the beginning, some participants mentioned that they felt forced to pick at least one item on every page (for example: "*I assumed I was supposed to buy at least something*"), thus not giving them the freedom to shop as they

normally would. Even though they could continue to the next page without selecting anything, this was not clear for all participants, as apparent from the following quote: "*Not being able to skip categories that I did not need, made me almost fall into compulsive buying*.". As the mean number of items was 8.44 and there were 9 pages of clothing, it is probable that many participants felt they needed to select at least one item on every page. The previous mentioned alternative setup where participants are either followed while they shop in a real webshop or store, or track their actual consumption over a period of time might fix this problem as here they would probably not feel the pressure of having to buy something from every category since they can navigate the stores as they like. That way, they may also feel less forced to consume.

Thirdly, some participants mentioned that they selected a lot of items that, if it would have been a real shopping scenario, they later on would have removed from their basket before completing the purchase, like one participant that said: "*For me, adding clothes to my shopping cart does not necessarily mean that I am going to buy them. It is more for narrowing down the options, and at the end I will make a definite selection on what clothes I eventually buy*.". Some even said that they would sleep on it for a night before actually going through with the purchase ("*What usually happens when I shop is that I sleep over it before I make a purchase, because I do not want to buy something that I end up not needing*."). This shows that the webshop setting might not have been realistic enough and, again, the recommendations for future research at the beginning of this section might solve this.

Additionally, the experiment did not have a control group to which no manipulation video was shown. This would have been a good addition to establish a baseline condition for comparison. Future studies including this might get a more comprehensive view of the effects of the norm conditions.

Furthermore, the participants of the study all came from Delft University of Technology. This means that most of them will have had a substantial amount of knowledge on the topic of sustainability and overconsumption before coming in to the experiment. This might have influenced how they watched the manipulation videos and how they shopped afterwards, since, even though the video does not mention that or how the shown norms are sustainable or unsustainable, they likely made that connection themselves and thought of the effects of overconsumption that they learned about. The thought listing

task also showed that a lot of participants were already conscious of what they consume before the experiment (N = 125). Doing a similar research with participants that have less prior knowledge on the subject might provide more interesting results.

Moreover, the manipulations themselves could also be improved in order to get more tangible results. Firstly, the text in the videos was based on those of previous similar research projects. However, the percentages were much higher in the current research. This was done in an attempt to make the manipulation stronger, but might have worked counterproductive, since several participants mentioned they were sceptical about the numbers mentioned. For example, one participant noted "*Based on what I see around me and what I know about the fashion industry and overconsumption, I am very doubtful that 80% of people are actually becoming more conscious*." Similarly to this person, most participants that mentioned they were sceptical about the numbers, were sceptical about that many people behaving consciously (and were thus shown a sustainable static norm). This builds upon the previous suggestion that, because most participants were studying or working at Delft University of Technology, they already had knowledge on the subject, possibly influencing their behaviour. Secondly, even though the original research question of this thesis was about the integration of norms in design interventions, whether the videos can actually be seen as such remains to be seen. For now, it was interesting to put the interventions in a simple form as to really only measure the effects of the norms. However, for further research it might be interesting to look at how these norms can be integrated into design interventions in the actual webshop or store. Possible ideas for this are 1) educational marketing campaigns, 2) product packaging with information such as price tags or wrappers, 3) a waiting period before being allowed to complete purchase, 4) reverse loyalty campaigns where consumers are rewarded for not buying something, 5) mindful shopping zones where the norms are shown in store, 6) basket or webpage that changes its appearance based on how many items selected, etcetera. Lastly, it seemed like the donation question sometimes served more as an intervention that triggered the stop and re-think process than the video did. For example, one participant mentioned "*In the [donation] page I felt slightly guilty for using the money for myself instead of the cause(which I would not have felt if I wasnt asked about donating)*", indicating that they did not feel guilty about the shopping itself, but the guilt only came because of the donation.

Informing the participants about the upcoming donation option at the beginning of the process, as suggested in the beginning of this section, might remove this extra manipulation. Furthermore, this donation phenomenon teaches us that perhaps showing the manipulation while shopping (e.g. on a banner in store on or on the webshop), halfway through (e.g. through a popup) or at the end giving them a chance to go back (e.g. with the waiting period before being allowed to complete the purchase) might be more effective. By performing the suggested experiment over a longer period of time, the manipulation is also done halfway through.

6. Conclusion

In this thesis I attempted to investigate the effects of different combinations of (un)sustainably framed static and dynamic norms. While most of the analyses did not provide significant results, there were implications that the interaction between the static and dynamic norms do affect consumption behaviour. Besides, unsustainable norms seemed to be more effective than sustainable ones, especially when matching with each other. There was also a clear relation between the framing of the norms and the emotions the participants felt. All this together can, be seen as explorative, laying the groundwork for future research. I hope that by trying out this research setup and suggesting adjustments, future research can provide more definitive results, so that the combination of static and dynamic norms can be used to reduce overconsumption and therefore help the environment.

Appendix A: Manipulation materials

Figure A.1:Video frame for the sustainable static norm

Figure A.2: Video frame for the unsustainable static norm
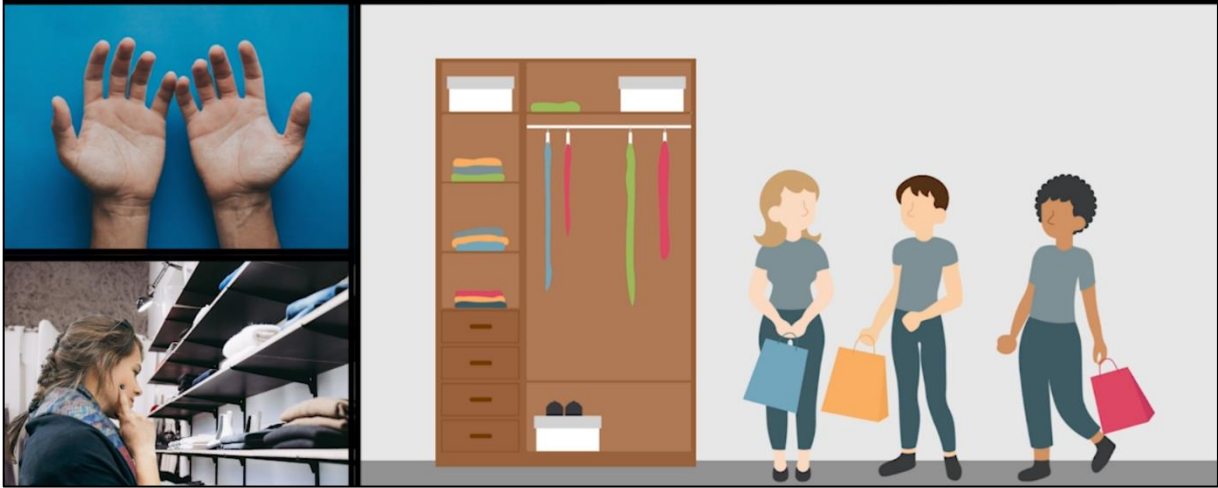
Figure A.3:Video frame for the sustainable dynamic norm

Figure A.4:Video frame for the unsustainable dynamic norm

Appendix B: Stimuli webshop pages

Waterfall gala dress
€79,95

Chiffon V-neck dress
€55,00

Shirt maxi dress
€74,95

Ruched sweetheart dress
€54,95

V-neck maxi dress
€69,95

Volant collar mini dress
€45,99

Corduroy shirt dress
€54,95

Flower cocktail dress
€51,99

Thin straps maxi dress
€29,95

Figure B.1: Women dresses page

High waist flared jeans
€34,95

Grey relaxed fit jeans
€29,99

Skinny fit jeans
€79,95

Light straight leg jeans
€29,99

Mom relaxed fit jeans
€39,99

Bootcut corduroy jeans
€56,95

Black straight leg jeans
€35,99

Washed straight leg jeans
€77,95

Mom jeans tapered fit
€33,95

Figure B.2: Women jeans page

Faded flannel blouse
€27,95

Button down blouse
€45,99

Blue striped button down
€25,95

Puff sleeved blouse
€46,95

V-neck lace blouse
€29,95

V-neck blouse
€33,95

V-neck blouse
€32,95

Corduroy button down
€38,99

Cropped blouse
€29,95

Figure B.3: Women blouses page

Vintage look A-line skirt
€54,95

Flower wrapped skirt
€22,99

Maxi skirt
€49,95

Distressed denim skirt
€39,99

A-line midi skirt
€35,99

A-line mini skirt
€25,95

Checked mini skirt
€37,99

Corduroy A-line skirt
€19,95

Stretch denim skirt
€36,99

Figure B.4: Women skirts page

Half zip jumper
€43,95

Ribbed jumper
€39,99

Dark orange cardigan
€34,95

Turtle neck jumper
€29,99

Striped jumper
€41,99

High neck jumper
€56,95

Cropped sweatshirt
€25,99

Taupe grey jumper
€24,95

Black cardigan
€19,95

Figure B.5: Women jumpers and cardigans page

Deep cut t-shirt
€15,95

Long sleeved top
€24,99

Flower long sleeved top
€17,99

V-neck long sleeved top
€29,90

Ribbed sweetheart shirt
€19,99

Striped oversized t-shirt
€20,95

Cropped basic t-shirt
€11,99

Basic ribbed t-shirt
€16,95

Cropped long sleeve polo
€24,95

Figure B.6: Women t-shirts and tops page

Spotted day dress
€30,99

Straight ankle jeans
€35,00

Plain blouse
€24,95

Checked A-line skirt
€26,95

Knit cardigan
€29,95

Long sleeved top
€25,90
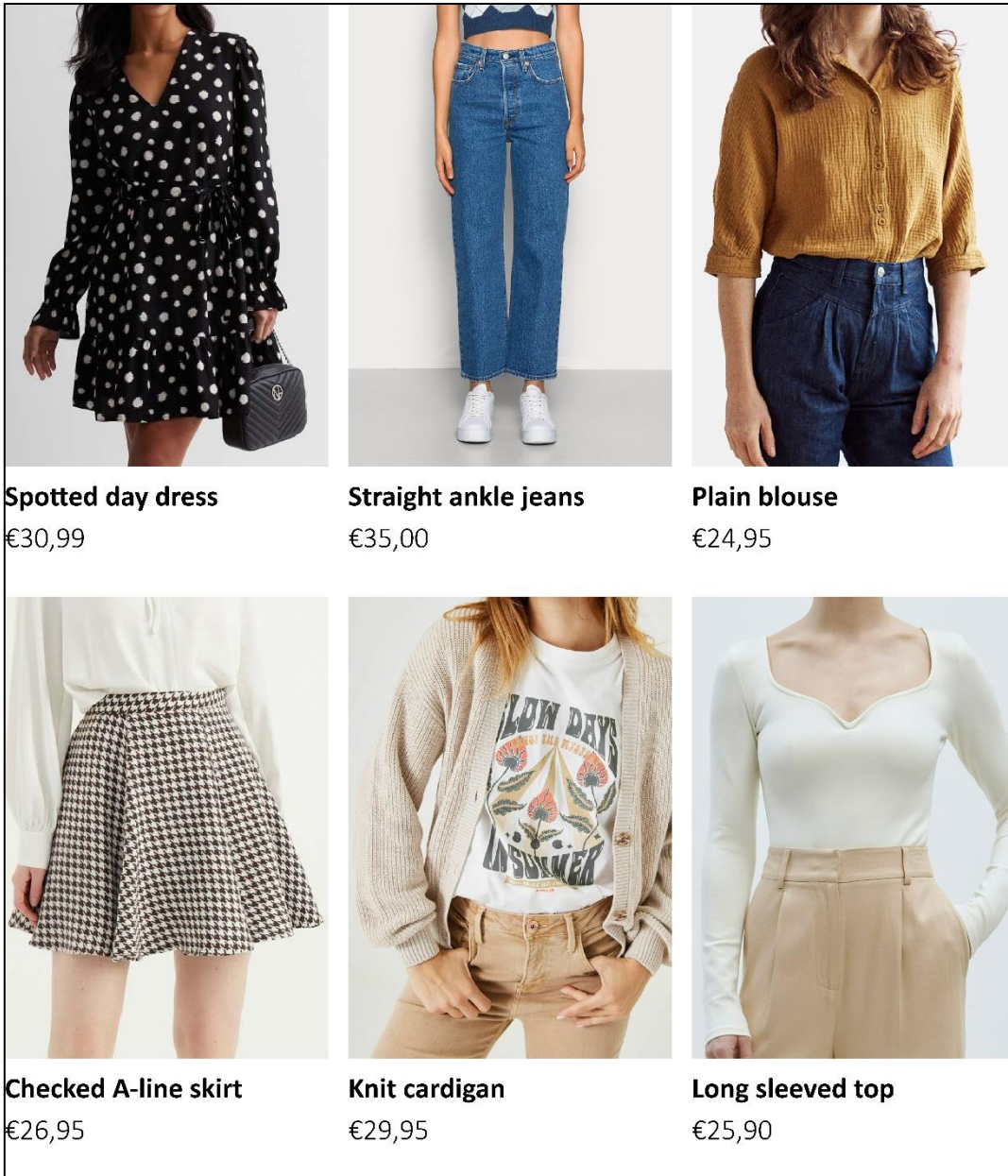
Figure B.7: Women extra page

Crewneck sweatshirt
€49,95

Mint hoodie
€39,00

Button sweatshirt
€45,50

Navy crewneck
€30,95

Half zip sweatshirt
€49,95

Petrol zip-up sweatshirt
€39,99

Khaki hoodie
€34,95

Half zip fleece jumper
€51,99

Zip-up sweatshirt
€29,99

Figure B.8: Men sweaters page

Green tapered fit jeans
€67,95

Tapered fit jeans
€35,99

Beige slim fit jeans
€59,95

Distressed skinny fit jeans
€59,95

Dark blue tapered fit jeans
€74,99

Slim fit jeans
€34,95

Brown straight leg jeans
€87,95

Black slim tapered jeans
€69,95

Relaxed fit jeans
€49,99

Figure B.9: Men jeans page

Striped short sleeve shirt €35,99	**Checked formal shirt** €43,99	**Linnen blend short sleeve** €44,95
Black formal shirt €79,99	**Neutral button-up shirt** €48,00	**White formal shirt** €46,95
Corduroy shirt €39,99	**Slim fit formal shirt** €97,95	**Worker plaid shirt** €63,95

Figure B.10: Men shirts page

Tailored baggy trousers
€35,99

Navy stretch trousers
€79,50

Tapered fit smart bottoms
€54,95

Cargo pants
€79,99

Tan trousers
€34,99

Beige trousers
€46,95

Checked chinos
€67,45

Stone cargo trousers
€49,99

Black trousers
€79,99

Figure B.11: Men trousers page

Textured crew jumper
€89,99

Half zip jumper
€79,99

Textured jumper
€48,00

High collar cardigan
€89,99

Standard fit jumper
€45,99

Long cardigan
€78,95

Navy half zip jumper
€85,00

Jumper
€69,95

Womber jacket
€60,00

Figure B.12: Men jumpers and cardigans page

Striped long sleeved top
€24,95

Pocket t-shirt
€24,99

Henley long sleeved top
€39,99

Long sleeve polo shirt
€46,90

Long sleeved top
€19,99

Crewneck long sleeved top
€30,95

Polo shirt
€37,50

Striped t-shirt
€19,95

Relaxed fit basic t-shirt
€29,00

Figure B.13: Men t-shirts page

Khaki sweatshirt
€26,99

Relaxed fit jeans
€35,00

Long sleeve shirt
€28,95

Brown chinos
€32,95

High neck jumper
€34,95

Contrasting basic T-shirt
€23,90

Figure B.14: Men extra page

Appendix C: Codebook thought listing question

Table C.1: Codebook experiment setup theme

Code	Occurance	Meaning	Example
Forced to choose	14	Feeling forced to choose a certain number of clothing items	*"I felt like I had to choose a certain type of clothing every time"*
One event	9	Taking shopping for one event into consideration	*"Since the assignment mentioned I had one event coming up, I didn't select anything else"*
Price	55	Shopping made easier because of lack of budget	*"Not thinking about the price made it much easier to shop, I could be less picky."*
Sceptic	13	Not believing text from the manipulation	*"I know a lot of people who overconsume on their clothing. So maybe I am a bit sceptical about this information"*
Use leftover money for something else	23	Not wanting to donate the money, but also not wanting to continue shopping	*"If I ended up spending less money than planned I would probably just keep it and use it for something else."*

Table C.2: Codebook sustainable intention theme

Code	Occurance	Meaning	Example
Buying clothes they need	41	Only selecting items they need	*"I really try to only buy things I really need and that are timeless"*
Sustainable intention	60	General intention to perform sustainable behaviour	*"I feel hesitated to buy a lot of things anyway, even though there was no budget limitation"*
Awareness	18	the manipulation made them more aware of what and how many items they selected	*"I felt more aware of not buying too much due to the video"*
Buying clothes they do not need	13	Selecting items they do not need	*"I was choosing mainly items I'd like, independent of if I already had enough pants/shirts"*
Buying too much	12	Saying they bought too much	*"I felt like I was maybe buying too many clothes*
Disregard sustainability	111	General mention of how they do not think about or disregard thoughts about sustainability	*"Did not necessarily suddenly take the environment more into consideration, went shopping like normally"*

Table C.3: Codebook consiousness theme

Code	Occurance	Meaning	Example
Already conscious	125	Being conscious about consumption before experiment participation	*"Personally, I try and have tried for the last couple of years to reduce the amount of clothing I buy and to buy second hand items."*
Need to be more conscious	37	Mentioning that they do not shop consciously but want to improve that	*"Seeing this video made me realise this and that I want to be more mindful of my shopping habits"*
Not conscious	18	Clearly does not shop consciously and does not mention improving	*"I feel these emotions because I also buy more clothes than I need"*

Appendix D: Experiment results

Table D.1: Results reliability analyses of the used scales

Scale	No of items	Cronbach's Alpha
Usual shopping behaviour	8	.72
Environmental concern	3	.73
Two-item consumption scale	2	.74
Positive emotions	3	.78
Negative emotions	3	.70

Table D.2: Pearson Product-moment correlations between covariates

Scale	Usual shopping behaviour	Environmental concern	Age
Usual shopping behaviour	-	.13	-.14
Environmental concern	.13	-	-.07
Age	-.14	-.07	-

Table D.3: Results seperate emotion ANOVAs

Emotion	Result
Satisfaction	For satisfaction, no significant interaction effect was found (F (1, 267) = .25, p = .62). There was a statistically significant main effect for the dynamic norm (F (1, 267) = 113.78, p < .005), part. η^2 = .30), where an unsustainable dynamic norm resulted in lower satisfaction (M = 2.51, SD = .12) than a sustainable dynamic norm (M = 4.25, SD = .12). The main effect for the static norm (F (1, 267) = 2.95, p = .09) did not reach statistical significance.
Pride	There was also no significant interaction effect found for pride (F (1, 267) = .02, p = .90). However, both main effects were significant. With the static norm (F (1, 267) = 10.82, p = .001, part. η^2 = .04) showing a lower rating of pride when unsustainable (M = 2.78, SD = .13) than when sustainable (M = 3.37, SD = .13). The dynamic norm (F (1, 267) = 86.49, p < .005, part. η^2 = .25), similarly, also resulted in a lower pride rating when unsustainable (M = 2.24, SD = .13) than when sustainable (M = 3.91, SD = .13).
Hope	For hope, no significant interaction effect was found (F (1, 267) = .00, p = 1.00). There was a statistically significant main effect for the dynamic norm (F (1, 267) = 167.86, p < .005), part. η^2 = .30), where an unsustainable dynamic norm resulted in a lower rating for hope (M = 2.47, SD = .12) than a sustainable dynamic norm (M = 4.69, SD = .12). The main effect for the static norm (F (1, 267) = .46, p = .50) did not reach statistical significance.
Anger	Anger was the first of the negative emotions. For anger, there was a significant interaction effect between the sustainability framing of the static and dynamic norms (F (1, 267) = 5.76, p = .017, part. η^2 = .02). Simple effect tests showed further that an unsustainable static norm resulted in a higher rating for anger when combined with a matching unsustainable dynamic norm (M = 3.54, SD = .19) than when combined with a mismatching sustainable dynamic norm (M = 2.76, SD = .19; F(1, 267) = 8.51, p = .004, part. η^2 = .03). The sustainable static norm resulted in a lower rating for anger when combined with a matching sustainable dynamic

norm (M = 1.88, SD = .19) than when combined with a mismatching unsustainable dynamic norm (M = 3.57, SD = .19; F(1, 267) = 40.03, p < .005, part. η^2 = .13). The sustainable dynamic norm resulted in a lower rate for anger when combined with a matching sustainable static norm (M = 1.88, SD = .19) than when combined with a mismatching unsustainable static norm (M = 2.71, SD = .19; F(1, 267) = 10.65, p = .001, part. η^2 = .04). The combinations with the unsustainable dynamic norm did not prove significant.

Shame	For shame, there was a significant interaction effect between the sustainability framing of the static and dynamic norms (F (1, 267) = 5.69, p = .018, part. η^2 = .021). Simple effect tests showed further that an sustainable static norm resulted in a lower rating for shame when combined with a matching sustainable dynamic norm (M = 2.27, SD = .21) than when combined with a mismatching unsustainable dynamic norm (M = 3.66, SD = .21; F(1, 267) = 21.48, p = < .005, part. η^2 = .07). The combinations with the unsustainable static norm did not prove significant. The sustainable dynamic norm resulted in a lower rate for shame when combined with a matching sustainable static norm (M = 2.27, SD = .21) than when combined with a mismatching unsustainable static norm (M = 3.49, SD = .21; F(1, 267) = 16.32, p < .005, part. η^2 = .06). The combinations with the unsustainable dynamic norm did not prove significant.
Aversion	**Aversion** There was no significant interaction effect found for aversion (F (1, 267) = .15, p = .70). However, both main effects were significant. With the static norm (F (1, 267) = 5.48, p = .02, part. η^2 = .02) showing a higher rating of aversion when unsustainable (M = 3.01, SD = .13) than when sustainable (M = 2.60, SD = .13). The dynamic norm (F (1, 267) = 81.15, p < .005), part. η^2 = .23), similarly, also resulted in a higher aversion rating when unsustainable (M = 3.60, SD = .12) than when sustainable (M = 2.01, SD = .13).

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