SUSTAINABLE CLOTHING CONSUMPTION;

Integrating behaviour change frameworks into a stepwise design process for environmental impact

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ABSTRACT

Our current way of clothing consumption has a large negative effect on the environment. Changes in consumer behaviour are needed to reduce this impact. During this research, a stepwise design method was developed based on existing behaviour change frameworks and theories (The COM-B model, Change Potential, and the SHIFT framework, among others), which can be used to approach challenging behaviour change design projects. This method was used to create intervention concepts which aim to reduce barriers to sustainable clothing consumption behaviours, which are experienced by Frisian consumers. The design method was improved based on experiences gained during this project.

1 ACKNOWLEDGMENTS

CONTENTS

2 INTRODUCTION

2.1 PROBLEM DEFINITION

The rise of fast fashion has led to an abundance in the availability of cheap clothing and fast-moving trends, which has led to a rise in clothing purchases (Rebel 2023). Global clothing production has nearly doubled in the past 15 years, while the average item of clothing is used 40% less. (Johnson et al., 2021) The clothing and footwear industry is responsible for more than 8% of the global climate impact, which is more than all international flights and maritime shipping combined. It is also the second largest consumer of water and produces 20% of the global wastewater (Wiebke, 2020). If nothing changes about the way we currently consume clothing, the fashion industry will use up a quarter of the world's carbon budget by 2050 (United Nations Environment Program, 2021).

Although many consumers are more aware of the impact of their consumption behaviour, the amount of clothing consumption is still growing (Rebel, 2023). This difference between awareness and behaviour is called the awareness-intention-behaviour gap (Lilley, 2009). Awareness alone will not reduce the impact of the clothing industry; Consumers need to drastically change their behaviour if we want to reach the sustainability goals.

This urgency has also been recognized by the Frisian Environmental Federation (FMF). The FMF is an umbrella organisation for organisations that are committed to creating a transition to a sustainable society and environment in Friesland. They work on various projects in the areas of 'climate and energy', 'biodiversity and nature', 'circular economy', and more. They have requested a study about how the inhabitants of Friesland can be motivated to change their behaviour towards a more responsible and sustainable form of clothing consumption. This issue is first to be tackled locally, in the province of Friesland, after which it could be implemented nationally in case of success.

The intention of this project is thus to translate a broad sustainability issue into impactful behaviour change interventions. There are multiple methods for designing effective behaviour change interventions, such as The Behaviour Centered Design method (Aunger et al., 2016), MINDSPACE (Dolan et al., 2010), and the Design with Intent method (Lockton et al., 2010). However, no method was found which includes a way to determine which behaviours should be designed for to create the highest positive impact. Many environmental issues can be reduced by a variety of consumer behaviours. To create an impactful intervention with limited resources, it is important to know which behaviours should be addressed to create the highest impact. Therefore, the second intention of this project is to create a new design method for creating impactful behaviour change interventions, based on established behaviour change theories and design methods, which can be used by designers and organisations like the FMF to translate broad sustainability issues into impactful behaviour change interventions. This method will be used to tackle the earlier mentioned objective of researching how Frisian inhabitants can be motivated to change their clothing consumption behaviour, and the experiences gained during this case project will be used to evaluate and improve the method.

2.2 OBJECTIVES AND RESEARCH QUESTIONS

The objective of this project consists of two parts. The first objective is to answer the following research question: 'How can the FMF motivate the inhabitants of Friesland to change their behaviour towards a more responsible and sustainable form of clothing consumption?' This will be solved by answering the following sub-questions:

- Which sustainable behaviours can consumers perform to lower the environmental impact of their clothing consumption?
- Increasing which of these sustainable behaviours will have the highest positive impact?
- What are the barriers the inhabitants of Friesland experience which prevent them from performing these sustainable behaviours?
- Which intervention(s) could reduce these barriers?

The second objective is to develop a step-by-step method based on established behaviour change theories and design methods, with which such complex behaviour change projects can be tackled. This method will be developed, used, and evaluated during the execution of this project.

2.3 STRUCTURE OF THE REPORT

This report will start with the development of the method. First of all, established behaviour (change) theories which will be part of the method will be discussed. These are the Change Potential, Environmental Gain, and COM-B methods. Then an overview will be made of the behaviour change strategies which were found in behaviour change frameworks such as the SHIFT framework and Nudging theory. Based on this information a first version of the new design method will be created and explained.

After this, the method will be used to tackle the case project. First, the problem, target group, and sustainable behaviours will be defined. Then a literature review will be performed to gather information about the sustainable behaviours. A survey will be distributed to the Frisian population to measure the change potential, and to study which barriers they experience which prevent them from performing the sustainable behaviours. Based on the Change Potential and Potential Environmental Gain, behaviours with the most potential will be selected, and intervention objectives will be created based on the barriers found in literature and through the survey, and these will be connected to behaviour change strategies (BCSs). Brainstorming sessions will be held individually and together will the target group, to generate concepts which use the BCSs to address the intervention objectives. A selection of concepts will be evaluated based on, among others, their potential effectiveness, feasibility, and ethicality, and a final selection of concepts will be made.

Finally, the design method will be evaluated based on experiences gained during the case project and feedback from FMF employees, after which an improved version will be made and explained.

3 GLOSSARY OF ABBREVIATIONS

Abbreviation	Meaning
FMF	Friese Milieu Federatie
CP	Change Potential
PEG	Potential Environmental Gain
BCS	Behaviour Change Strategy
IO	Intervention Objective

4 BEHAVIOUR CHANGE THEORIES

There are many frameworks and theories for behaviour change. This section contains the theories which are used as the basis for creating a new design method. The Change Potential and Potential Environmental Gain will be used to select impactful behaviours, the COM-B model will be used as a guideline for barrier research, and the SHIFT framework, nudging, and other behaviour theories will be used to create a list of behaviour change strategies which will be used to reduce the found barriers. Additionally, the ethical aspect of design for behaviour change will be discussed.

4.1 CHANGE POTENTIAL AND POTENTIAL ENVIRONMENTAL GAIN

To increase the chance of creating an impactful intervention, it is important to select the right behaviour(s) to increase. This selection can be made based on the change potential (CP) and potential environmental gain.

Koch et al. (2023) explained the CP as the percentage of people who are willing to perform a behaviour but who are, for some reason, not yet doing so. The Change Potential (CP) is calculated by subtracting the percentage of people who perform a behaviour from the percentage of people who are willing to perform a behaviour (Koch et al., 2023).

Koch et al. (2023) also discussed the Potential Environmental Gain (PEG) of behaviours, which is the amount of positive environmental impact caused by an individual when performing a behaviour. For example, buying *less* new clothing has a larger PEG than buying more clothing made from sustainable materials (when purchasing the same amount of items).

According to Koch et al. (2023), it would be best to focus efforts first on the behaviours with the largest CP and largest PEG, since a larger group of people can be easily convinced to perform a behaviour they are already willing to do by improving accessibility and affordability (Capability and/or opportunity, according to the COM-B model (Michie et al., 2011)), and a large impact can be made by increasing the performance of these behaviours. However, behaviours with a large CP but smaller PEG should not be ignored, because large impacts can still be made if many people perform these behaviours.

Behaviours with a large PEG, but low CP, need more than only improving the capability or opportunity. A low CP means that most of the people who are willing to perform an action are already doing so. To increase the performance of these behaviours, more people should be motivated to perform them as well. One should be wary of the fact that a low CP could also mean that most people already perform the behaviour, in which case it would not be useful to put much effort into this.

Behaviours with a small PEG and small CP should be last on the list since it will take much effort to motivate people, and the impact will not be very significant.

The PEG of each behaviour will be discussed in section 9. The CP will be calculated by measuring the performance and willingness of the target group for each of the sustainable behaviours through a survey (see section 10.2). These factors will be used to determine which behaviours have the most potential for a large impact when targeted through intervention design, making them the most interesting to focus on during the design phase.

4.2 THE COM-B MODEL

After selecting the behaviours, it is necessary to identify what prevents the target group from performing them. The COM-B model can be used as a guideline for this barrier research.

The COM-B model is a framework which divides factors which influence behaviour into three sections: Capability, Opportunity, and Motivation. Capability is defined by Michie et al. (2011) as "*the individual's psychological and physical capacity to engage in the activity concerned*", motivation as "*all those brain processes that energize and direct behaviour, not just goals and conscious decision-making*", and opportunity as "*all the factors that lie outside the individual that make the behaviour possible or prompt it*". For someone to perform a behaviour, each of the three components needs to be present; A behaviour will not be performed in case one of the components is missing or insufficient. Just like a fire needs fuel, heat, and oxygen to burn, behaviour needs capability, opportunity, and motivation.

These three components are each divided into two sections. For capability, these are physical (e.g., skills) and psychological capability (E.g., knowledge, attention, behavioural regulation. For this project, physical capability may mean the physical capability to reach a store, and psychological capability may mean knowing the impact of textiles or knowing where to buy second-hand clothing. (Michie et al., 2011) (Milieucentraal, 2023)

For opportunity, the two components are physical opportunity (based on the environment), and social opportunity (based on social or cultural influences). For this project, physical opportunity could be based on the availability of, for example, tailor shops or rental stores. Important to this project is also the economic resources someone has, which are needed for behaviours like buying quality clothing. This can be sorted under physical opportunity as well since it is a resource which needs to be available to the individual. Social opportunity could be based on the (perceived) social expectations for outfits, or social trends (Michie et al., 2011) (Milieucentraal, 2023). Behaviours of the social circle of an individual can influence their behaviour, and the opinion of friends and family can have a strong influence on someone's perception of, for instance, second-hand clothing. (Milieucentraal, 2023)

Motivation is divided into reflective motivation (Conscious processes, evaluations, and plans) and automatic motivation (e.g., emotions, impulses). This division is also made in the 'system 1 and system 2 thinking' theory, in which system 1 is our brain's fast and automatic response to stimuli (based on emotions, habits, instinct, etc.), and system 2 a slower process, using logic to solve more complicated problems. (*System 1 and System 2 Thinking - the Decision Lab*, n.d.). An example of automatic motivation would be buying an item because it is on sale (an incentive), and an example of reflective motivation would be buying an item only after researching its quality and sustainability (intentional purchasing).

A part of reflective motivation is the optimism someone feels about the impact of individual behaviour and the optimism about the readiness of others to act in the same way. All the components of the COM-B model (or Behaviour change wheel, as Milieucentraal (2023) calls it) can be seen in Figure 1.
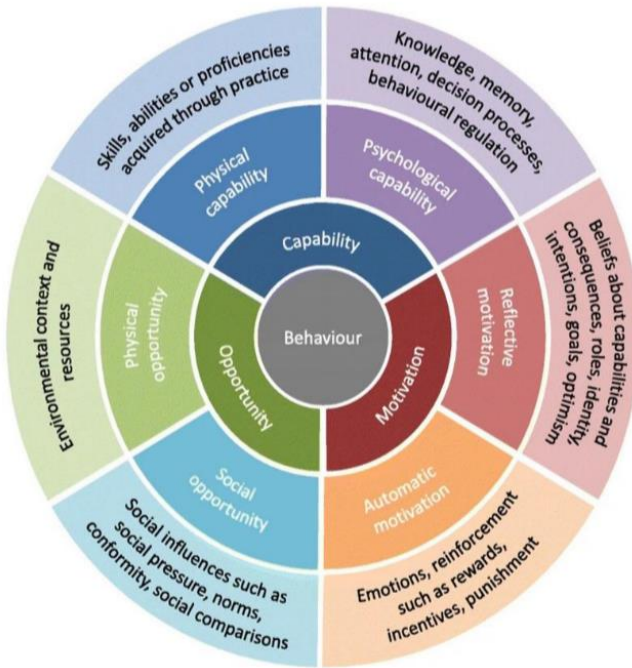
Figure 1; Behaviour change wheel (Milieucentraal, 2023)

The three components also influence each other; Opportunity and capability can both influence motivation and performing a behaviour can influence all three of the components. This is shown in Figure 2. While an intervention may only address one of the components of the system, these connections can cause other components to change as well. (Michie et al., 2011)

This model shows that not only motivation defines behaviour, but also the physical and mental capability of the individual, and opportunity determined by contextual circumstances. Therefore, it is important to find out which components are preventing people from performing the desired behaviours in Friesland. This will be done by survey, which will be explained in section 10.
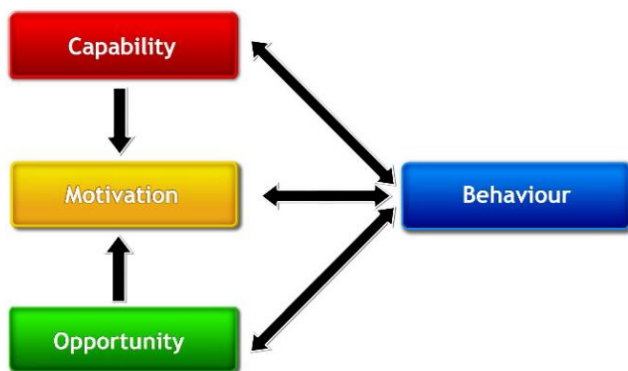
Figure 2; Influences in the COM-B model (Michie et al., 2011)

4.3 BEHAVIOUR CHANGE STRATEGIES

Once the barriers that need to be reduced are identified, the next step is to determine how to reduce them. This section discusses theories which include strategies for behaviour change. These established behaviour change strategies (BCSs) serve as the foundation for designing effective interventions. The theories which will be discussed are, amongst others, the SHIFT framework and nudging theory. Section 4.4 contains a summary of all the BCS which were extracted from these theories.

4.3.1 The SHIFT framework

White et al. (2019) have created a theoretical framework which could help address the attitude-behaviour gap. They have defined 5 factors which influence motivation and behaviour: Social influence, Habit formation, the Individual self, Feelings and cognition, and Tangibility. Each of these factors is translated into BCSs, which can be found in section 4.4.
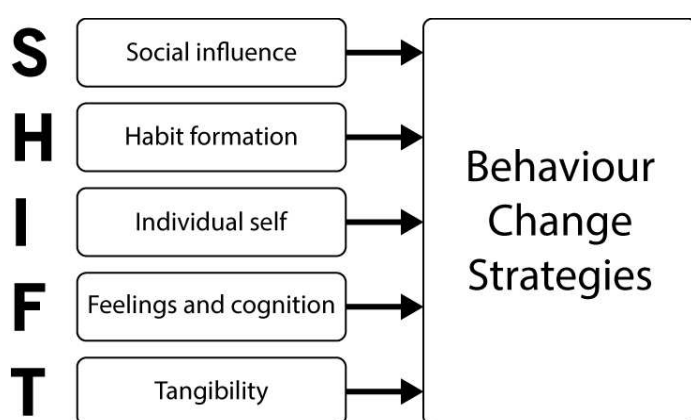
Figure 3; The SHIFT framework

Social influence
According to White et al. (2019), social influence is the most influential factor for behaviour change. Consumers are highly influenced by other people's behaviours, expectations, and social norms. Communicating what is generally approved or disapproved of can affect behaviour but must be done carefully must be used carefully since threatening people's feelings of autonomy could have an adverse effect.

Highlighting other people's behaviour can increase the perceived collective action, which motivates individuals by showing that they are not alone in their efforts. Additionally, in-group identity influences behaviour; people who see themselves as part of a sustainable group are more likely to act sustainably. Promoting sustainable behaviours within these groups and fostering friendly competition between groups can encourage sustainable behaviour.

Habit formation
Habits are automatic behaviours triggered by contextual cues, such as checking your pockets for keys each time you are leaving your home. About 45% of daily actions are habits, and they can include unwanted behaviours, like checking your phone for notifications, or visiting clothing stores each time you walk by. This contributes to the awareness-intention-behaviour gap by preventing people from performing intended behaviours

To change a habit, one should either change the context or attach a new habit to existing cues, like taking a different route to avoid a shopping area. Penalties may work to change habits but can cause

defensive reactions. Making desired behaviours easier or the default helps with forming sustainable habits. To form a new habit, an action should be performed many times with the same cue. Reminders, especially if clear and near the location where the habit should be performed, are effective. Feedback encourages persistence, but rewards should be avoided as they can reduce intrinsic motivation and do not produce long-term change.

The individual self
How people see themselves, and the labels they use to describe themselves, is known as the 'self-concept' or 'self-identity'. Van der Werff et al. (2014) define "environmental self-identity" as seeing oneself as environmentally friendly, which is an important predictor for environmental behaviour. Reminders of past sustainable actions and feedback strengthen this environmental identity and can encourage more green actions (Van der Werf et al., 2014). However, this can also have a negative spill-over effect; Awareness of past green actions may lessen the motivation for other green behaviours. People may feel they've done enough already (White et al., 2019).

Highlighting the personal benefits of sustainable actions can motivate people, although this approach alone is not always effective (White et al., 2019). 'Self-efficiency is the belief that one can perform a behaviour and that the behaviour will have the intended impact. Helping people believe in their self-efficiency could also motivate them to perform behaviours. (White et al., 2019)

Other factors to consider are self-defensive reactions to negative feedback and information biases which cause them to seek out confirmation of their personal view.

Feelings and cognition
Emotions strongly influence motivation and can drive action. For example, environmental campaigns often use 'cute appeal' by using images of animals in distress, which invokes empathy and prompts positive actions. Attaching positive associations to sustainable actions, such as health, nature, and innovation, as well as highlighting hedonistic pleasures and fostering hope can enhance motivation as well.

Negative emotions like guilt and sadness can also prompt action. Guilt can lead to a feeling of responsibility, although evoking feelings of guilt may also cause defensive reactions. Sadness is shown to lead to more sustainable behaviour. Feelings of sadness are most impactful while they are experienced. Fear is also addressed in behaviour change initiatives, but this should only be used in moderation, with additional information about which actions to take.

Knowledge and understanding both contribute to sustainable behaviour. Education and awareness of sustainable actions, such as the impact of an action, cause better environmental choices. However, providing information alone is not effective according to White et al. (2019). An overload of information can also decrease effectiveness.

The right framing of messages also impacts its effectiveness. Since people care more about future losses than future gains (loss aversion), a message focused on what could be lost may be more effective. Information can also be aggregated by, for example, showing lifetime numbers instead of yearly numbers.

An example initiative which uses feelings and cognition is the 'Reshare your memories' campaign created by Reshare (Intonijmegen, 2021). During the 'week of second-hand textile' in 2021, people who donated clothing in their store in Nijmegen received a card on which they could write a personal memory about the donated items. This way, these memories were shared with the next owner of the

items. They aimed to attach more emotional attachment to clothing; Something which has been declining in the age of fast fashion.

Tangibility
Sustainable actions and their outcomes can seem intangible; Abstract, vague, and distant from the self. Outcomes are hard to measure, and greenwashing creates even more confusion. Sustainability is very future-focused. Some payoffs are so far in the future, that they happen after our lifetime. This is called the 'long time horizon'. Sustainable behaviour often means compromising now for an outcome for future generations, instead of a self-relevant outcome. Since consumers are generally more present-focused, payoffs in the future are less interesting to them.

A solution to this is to make sustainability tangible. Highlighting the effects which happen in the near future, and local to them, may motivate people more than effects which happen in the distant future. Using visual images and analogies (e.g., "A garbage heap the size of the Empire State Building") can also make impacts more tangible and outlining clear steps may reduce confusion. Providing immediate positive feelings (warm glow) after an action, may reduce the barrier created by the long-time horizon.

Figure 4: Example of a visual analogy, in which the ecosystem is compared to a game of Jenga

4.3.2   Nudging

Sunstein (2014) defines nudging as 'steering people in particular directions while preserving full freedom of choice. He explains that interventions which use nudging strategies are often cheap solutions which can have a large impact. They are often meant to make life simpler, safer, or easier to navigate. He warns that 'nudges' should be transparent in intentions, and that they should never

manipulate people to act in a certain way, since this can backfire. He also presses that it should be tested, as nudges which seem promising often turn out to fail (Sunstein, 2014). In his paper 'Nudging; A very short guide', Sunstein explains 10 important forms of nudging:

1. **Default rules**
Examples are checkmarks which are checked as a default, default settings of machines (e.g., double-sided printing), or the first items which are shown when opening an online clothing store.

2. **Simplification**
The complexity of initiatives can significantly reduce their effectiveness, partly because it causes confusion, and partly because it is a barrier to people to participate. According to Sunstein (2014), the impact of simplification is easy to underestimate.

3. **Use of the social norm**
Just as White et al. (2019) described in the SHIFT framework, Sunstein (2014) highlights the impact of social influence on behaviour. He calls 'informing someone about the (sustainable) behaviour of others' one of the most effective nudges.
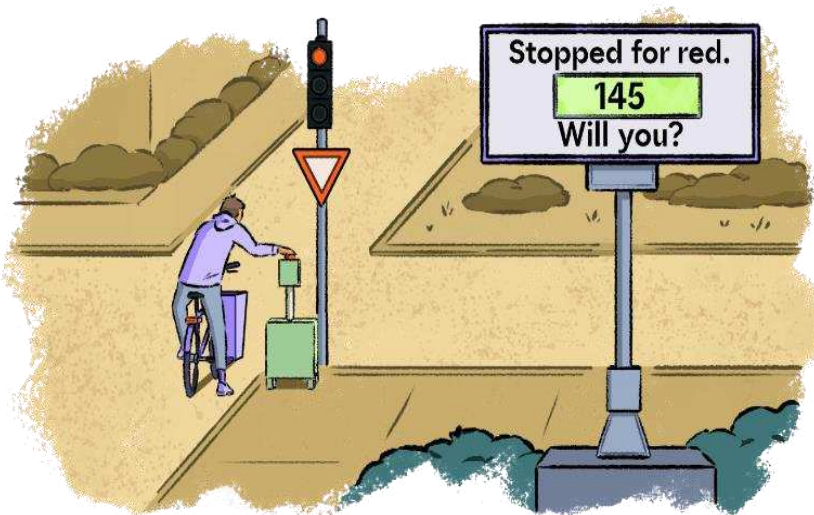
Figure 5: Example of using the social norm as a nudge

4. **Increasing ease and convenience**
Resistance to change is often caused by (perceived) difficulty. People often make the easy choice, so making the desired behaviour easier is a highly effective technique. This also means to reduce the time it takes to understand what to do. Making the behaviour easier to perform also helps with habit formation (White et al., 2019). Relevant examples are placing more and easily accessible clothing donation containers or collecting donations at the door, and making sustainable options more readily available.

5. **Disclosure and providing information**
Providing information can be a good strategy if the information is understandable (see Simplification). Disclosure can also work as a check on shady activities, such as greenwashing. According to Wee et al. (2021), providing information is most effective when it is adjusted to the needs of the target group. They also mention 'labelling' as a form of nudging (e.g., sustainability labels on items of clothing).

6. Warnings
Warning people of potential risks often stops them from acting in unwanted ways, and warnings can also reduce unrealistic optimism. To prevent the warning from being ignored or discounted, clear steps to reduce the risk should be given.

7. Pre-commitment strategies
Motivating people to keep acting towards a goal can also be defined as a nudging strategy. An example of this is Milieucentraal's '30 days challenge', in which participants are challenged to stop buying new clothing for 30 days (see Appendix 3).

8. Reminders and prompt
Correctly timed reminders can help people remember to perform certain behaviours during their busy daily lives. Prompts can also cause people to think again about their choices, such as the label shown in Figure 6, which prompts the user to hand the jacket down instead of throwing it out.

Figure 6: Example for using a prompt as a nudge

9. Eliciting implementation intentions
Prompting people's behavioural intentions (e.g., by asking a question) can prompt people to think about- and change their behaviour.
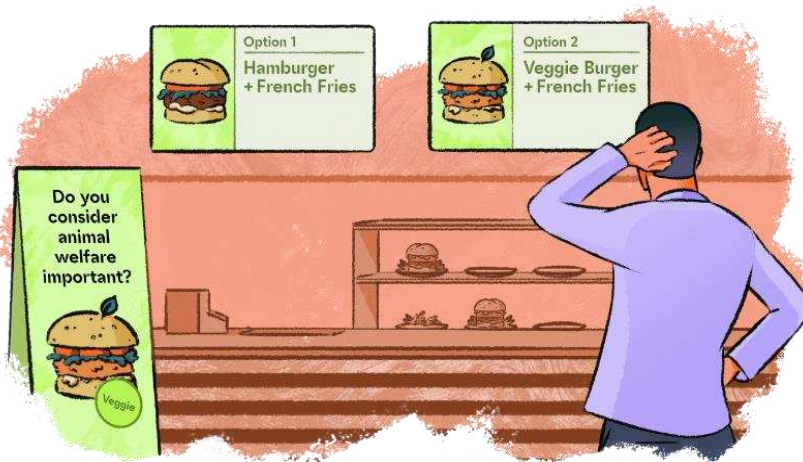
Figure 7: Example of Eliciting implementation intentions

10. Informing people of the nature and consequences of their past choices

The last Nudging strategy Sunstein mentions is to inform people about their past actions since people may not realize their own behaviour patterns. Just as White et al. (2019) mentioned in the SHIFT framework, Sunstein mentions emphasizing people's (environmental) identity as an effective behaviour change strategy.

Additional forms of nudging mentioned by Wee et al. (2021) are:
- **Sizing**- Reducing or increasing the size or quantity of equipment (E.g., increasing the size of recycling containers).
- **Priming**- Placing cues which trigger people's subconscious behaviour (E.g., painting footsteps on the floor to lead them somewhere).
- **Presentation**- Changing the look or other sensory qualities of a product or environment to make the desired behaviour more attractive
- **Functional design**- Changing the design or function of a product to change its usage. (E.g., making it harder to take a large quantity of a product or substance at a time.

Figure 8: Changing the presentation of stairs to nudge people towards healthy movement

The effectiveness of a nudge will differ per individual since everyone has different characteristics. The environment in which the nudge is set may also affect its effectiveness; Some nudges need to be noticed before they have an effect, and people may be distracted by the environment. Combining forms of nudging can increase their effectiveness for different people and environments. (Wee et al., 2021)

4.3.3 Additional theories

The SHIFT framework and nudging theory both offer an overview of strategies which can form the basis of an effective intervention. However, there are many other theories about behaviour and behaviour change which may offer additional information and strategies, which is why more theories have been analysed. These theories are the 'Theory of planned behaviour', the 'Self-efficacy theory', the 'Cognitive dissonance theory', the 'Self-perception theory', the 'Social learning or Social cognitive theory' (Mcleod, 2024), the 'Self-determination theory' (University of Rochester Medical Centre, n.d.), and the Expectancy-value theory' (Spott, n.d.). Additional information or strategies which were found while analysing these theories will be discussed in this section.

The Theory of planned behaviour mentions the importance of the *perceived* difficulty of performing a behaviour, as well as the *perceived* social norm and *perceived* opportunity, as important factors for behaviour, in addition to the actual state of these factors. The opportunity and capability to perform a behaviour should not only be sufficient, but they also need to be perceived as such. Therefore, when the target group mentions a lack of opportunity or capability as a barrier to performing a behaviour, it should be determined if this is an actual or a perceived barrier. In the case of the latter, more awareness about the possibilities may be needed. (The Theory of Planned Behaviour, n.d.)

The self-efficacy theory explains some strategies to increase people's self-efficacy; The belief they have in their ability to control themselves and events which affect their lives. These strategies are: emphasizing successful experiences of others, positive feedback and encouragement, and allowing people to make their own choices. Increases someone's feeling of self-efficacy can greatly influence their motivation. (Lopez-Garrido, 2023)

The cognitive dissonance theory explains that a feeling of discomfort is created when a person's behaviour is not in line with their beliefs. For example, when someone who finds sustainability important makes unsustainable choices. However, to reduce this feeling of discomfort, some people may change their beliefs instead of their behaviour (E.g., by only trusting information which confirms their actions). This phenomenon affects reflective motivation. (Mcleod, 2023)

The self-perception theory explains that people's behaviour may affect their attitude in case they do not already have a strong attitude towards that behaviour. This effect is used in marketing through the effective foot-in-the-door technique. Marketers first try to change people's attitude towards the subject by getting them to agree to a small request, before asking for larger changes in behaviour. (*Self Perception Theory - the Decision Lab*, n.d.).

The social learning theory argues that people learn new behaviours by observing the actions (and consequences of those actions) of other people. The motivation to imitate a behaviour needs to be gained by weighing observed positive and negative outcomes, and the behaviour needs to be seen as feasible. Role models can be people who are similar to the observer, people with a high status, knowledgeable or charismatic people, friends and family, or even fictional characters. People are more likely to imitate people who are like them or someone who has qualities they would like to possess. When people notice that a model is rewarded for an action, they are more likely to copy that action. Role models can also increase the sense of self-efficacy.

4.4 SUMMARY OF THE BEHAVIOUR CHANGE STRATEGIES

The theories discussed during the literature review presented many strategies for behaviour change strategies (BCS). This section will summarize these strategies, so they can be used to create concepts for effective behaviour interventions during the design phase of this project. The strategies will be sorted based on which COM-B factor they influence: Motivation, Capability, or Opportunity. Strategies will be mentioned multiple times in case they affect multiple factors. Some other strategies not mentioned in the literature (But deemed promising by the researcher) are added as well.

MOTIVATION
Reflective motivation strategies

Nr	BCS	Notes	Theory
1	Help people believe that they can perform the behaviour	*This improves perceived capability (perceived power)*	*Theory of planned behaviour*
2	Emphasize the successful experiences of others	*This can increase the feeling of self-efficacy (the belief in one's abilities)*	*Self-efficacy theory*
3	Use role models	*This can increase the feeling of self-efficacy (the belief in one's abilities). Role models should be similar to or admired by the target group. Highlight that the role model I rewarded for the desired behaviour, and that the behaviour is feasible.*	*Social cognitive theory*
4	Strengthen environmental self-identity	*Help people believe that they are environmentally friendly people by reminding them of past green behaviours or making green behaviours salient.*	*SHIFT*
5	Ask for small changes first	*Making small sustainable changes can change an individual's attitude towards the subject (the foot-in-the-door technique)*	*Self-perception theory*
6	Highlight self-benefits	*Highlight hedonistic pleasures or positive feelings attached to the behaviour*	*SHIFT*
7	Highlight impact	*Help people believe that individual behaviours have impact*	*SHIFT*
8	Make impact tangible	*Highlight local and near-future effects. Use visual images/analogies*	*SHIFT*
9	Create a feeling of hope	*Hopelessness can be a barrier to motivation, optimism a reason*	*SHIFT*

Automatic motivation strategies

Nr	BCS	Notes	Theory
10	Change the context to change unsustainable habits / form new sustainable habits	*Remove cues which trigger unsustainable habits. Add cues to form sustainable habits*	*SHIFT*
11	Make the desired habit the default/ easiest to perform		*SHIFT, Nudging*
12	Make unsustainable behaviour harder to perform		*Nudging*
13	Use the right framing in messages	Focus on loss instead of gain, aggregate information, etc.	SHIFT
14	Use 'cute appeal'	To evoke empathy	SHIFT
15	Create a feeling of sadness	*Most effective while the sadness is experienced*	*SHIFT*
16	Provide immediate positive feelings during or after the behaviour		*SHIFT*
17	Change the sizing of equipment	*E.g., increasing the size of donation containers*	*Nudging*
18	Use priming/cues to trigger subconscious behaviour	*E.g., placing arrows or footsteps on the floor*	*Nudging*
19	Change the presentation	*Change the looks or other sensory qualities of products or environments to make the desired behaviour more attractive*	*Nudging*
20	Change the functional design of a product	*To change how it is used*	*Nudging*
21	Prompting people's intentions	*E.g. ask people if they are planning to perform the action*	*Nudging*

CAPABILITY
Physical capability strategies

Nr	BCS	Notes	Theory
22	Make the desired habit easier to perform / more accessible		*SHIFT, Nudging*
23	Teach skills	*Teach people the needed skills through workshops, videos, etc.*	*Own addition*

Psychological capability strategies

Nr	BCS	Notes	Theory
24	Make the behaviour easy to understand	*Use simplification, provide clear steps to follow, and reduce the time it takes to understand what to do. This decreases the perceived difficulty*	*Nudging, Theory of planned behaviour*
25	Remind people of the desired behaviour	*Reminders should be large, clear, near the location, and easy to follow. People should be able to act immediately after the reminder*	*Nudging*
26	Provide information	*About the negative impact of the current behaviour, the positive impact of the desired behaviour, about which steps to take, etc. Most effective when it is adjusted to a specific target group, and from a trusted source.*	*SHIFT, Nudging*
27	Warn against unrealistic optimism	*E.g., The problem will not solve itself*	*Nudging*
28	Use 2olabelling to provide information	*E.g., sustainability or quality labels on products*	*Nudging*
29	Use role models to spread information	*E.g., via social media channels*	*Own addition*

OPPORTUNITY
Physical opportunity strategies

Nr	BCS	Notes	Theory
30	Make the desired habit the default/ easiest to perform		SHIFT, Nudging
31	Provide (more) resources	E.g., More second-hand shops	Own addition
32	Make it affordable	Or decrease perceived unaffordability	Own addition

Social opportunity strategies

Nr	BCS	Notes	Theory
33	Communicate sustainable behaviours of others	*Framing a behaviour like it is commonly done can influence the (perceived) social norm. It is most powerful when locally focused. When the desired behaviour is not common, highlighting the general positive opinion about the desired behaviour could work.*	*SHIFT, Theory of planned behaviour*
34	Make people feel like they are part of a sustainable in-group	People who feel like they are part of sustainable social circles are more inclined to behave sustainably themselves	*SHIFT*
35	Invite friendly competition between in-groups	People do not like to see their in-groups lose against other groups	*SHIFT*
36	Use role models	*This can increase the sense of belonging. Role models should be similar to or admired by the target group. Highlight that the role model is rewarded for the desired behaviour and that the behaviour is feasible.*	*Social cognitive theory*

4.5 EFFECTIVENESS OF STRATEGIES

Rau et al. (2022) have reviewed the effectiveness of various behaviour change strategies. According to this review, no intervention type is effective for every type of sustainable behaviour, and no intervention type is successful in causing long-term behaviour change on its own. The most successful interventions are combined intervention types, and interventions need to be adapted to the specific situation and target group. Rau et al. also mentioned that interventions work best if they are adaptable to the needs of individuals.

Rau et al. argue that interventions based on social influence, structural measures, feedback, and policies are very effective. Social influence and (peer) competitions seem to motivate, but role models are needed for this strategy. Structural measures can have a huge impact but do not necessarily change behaviour (E.g., Changing light bulbs to LED to save energy). The combined strategies 'Feedback and education on how to change behaviour' and 'Feedback and goal setting/commitment' were found to cause behaviour change. However, commitment strategies do not work without other intervention types. Enablement (support, techniques, tools, aids, etc.) was also found to be a helpful addition to other intervention types. Small changes to the environment (nudging) do work on their own, but only if people already have the needed skills and knowledge. Lastly, people are most willing to consider changes which give them a personal benefit, or which do not interfere with their current lifestyle too much.

Moral, educational, incentive, and community-based approaches were found to be less effective. Providing information did increase knowledge and change attitudes, but it did not always cause action. Rau et al. argue that tailored information is more effective than general information, and that

information should be clear and from a trusted source. Active training (e.g., workshops) was shown to have a positive effect on behaviour change. Incentives (e.g., rewards) were not found to create long-term behaviour change. Once the incentive is removed, people return to their old habits.

4.6 RISKS TO CONSIDER

There are multiple phenomena mentioned in literature one should watch out for when designing for behaviour change. These will be discussed in this section. These risks will be considered during the concept selection and evaluation.

The rebound effect
The rebound effect happens when the availability of sustainable resources leads to unsustainable behaviour, which leads to a greater negative impact than before. For example, when people know that recycling is an option, they may purchase more products (without feelings of guilt). For clothing, this might mean that the availability of sustainable fabrics may lead to more clothing purchases, or that the renting of clothing leads to careless behaviour which reduces the lifespan of the rented items. This rebound effect should be considered when designing interventions. (Rebel, 2023)

Moral licensing
Moral licensing happens when (sustainably conscious) people allow themselves to perform an unsustainable action, after performing one or multiple sustainable actions ("I can travel by plane this holiday since I have bought fewer clothes this year") (Rebel, 2023). This is hard to control or check for when designing interventions, since the moral licensing may happen in an entirely different area as what the intervention was designed for. Reminding people of past green behaviours, or making them aware of their green behaviours, may also lead to this effect. (White et al., 2019)

Autonomy
Both the self-determination theory, SHIFT framework, and self-efficiency theory mention autonomy as an important factor for behaviour. People's (feeling of) autonomy should not be threatened by the intervention, or it could have defensive reactions or adverse effects.

Rewards
Rewards should not be used as an incentive. They may lead to short-term behaviour change but could also replace and decrease intrinsic motivation. They do not lead to long-term behaviour change. (White et al., 2019)

Self-defensive reactions
People can have self-defensive reactions upon learning that their behaviour has negative impacts. This is mentioned in the SHIFT framework (White et al., 2019). The cognitive dissonance theory (Mcleod, 2023) argues that people may adjust their beliefs to fit their unsustainable behaviour. They can, for example, choose to ignore warnings and other information. Evoking feelings of guilt may lead to positive behaviour change, but it can also backfire because of self-defensive reactions (White et al., 2019)

Information overload
An overload of information may confuse people, leading to less motivation and sustainable behaviour. (White et al., 2019)

4.7 ETHICS OF DESIGN FOR BEHAVIOUR CHANGE

When designing for behaviour change, it is important to take ethical concerns into account. For example, some behaviour change interventions may change the behaviour of people in a way which is not desired by them. Brey (2006) defined 3 moral issues which should be considered when evaluating the ethicality of a behaviour-steering technology:

Does the intervention have a negative influence on the freedom of the user? And if yes, can these obstructions be morally defended? Brey argues that an intervention may not take away autonomy over the way people live their lives, but may sometimes constrict behaviour if it is for the greater good (e.g., for the protection of the environment)

Does every party have a significant say in the design and implementation of the intervention? Often, decisions over how design should influence behaviour are made by the designers, but other parties, such as the user, should be listened to as well.

How is the responsibility for negative results or effects caused by the intervention divided? If the intervention can cause undesired effects, it should be clear who is responsible before the intervention is implemented.

In section 13.4, the concept interventions will be evaluated on their ethical aspects, during which these 3 factors will be considered.

5 DESIGN METHOD

Thus far, multiple theories and frameworks about behaviour change have been discussed. These theories will now be combined with the 'design thinking' method to create a design method which can be used to translate broad sustainability issues into impactful behaviour change interventions; The Impactful Behaviour Intervention for Sustainability (IBIS) design method

The basis of the method will be the 'Design Thinking process'. This method was chosen because it is a well-known approach for solving complex design problems, and because it emphasizes the focus on the user during the design process (Dam, 2024). It consists of the following 5 steps:

1. Empathize – gaining an empathetic understanding of the users and the problem which needs to be solved
2. Define – Organizing the gathered information and defining the core problems
3. Ideate – Generating ideas to solve the problem(s)
4. Prototype – Creating prototypes of concepts to be able to test them with users
5. Test – Testing the product

Figure 9 shows an overview of the first version of the IBIS method. As can be seen, the order of the Design Thinking process is followed, and the behaviour frameworks which are discussed are implemented in various steps of the method. The following section will explain each step in detail.

IBIS Method version 1

Problem definition
↓
Target group definition
↓
Defining sustainable behaviours

Change potential   Potential environmental gain

Survey

Literature review,
expert interviews,
target group
interviews, etc.

Selecting focus behaviours → Excluded behaviours
↓
Finding barriers

Motivation   Opportunity   Capability

Listing improvement opportunities
↓

Based on design strategies &
target group input
→ Brainstorming
↓

Based on potential
effectiveness & addressed
barriers
Concept(s) selection ←
↓

Target group, expert,
ethical, functional,
risks, etc.
→ Evaluation
↓
Testing
↓
Implementation

Empathize
Define
Ideate
Prototype Test

Figure 9: Method scheme

5.1 EXPLANATION OF THE METHOD

Problem definition
First of all, the sustainability issue which needs to be solved by designing an intervention needs to be defined. Research (E.g., Literature review, expert interviews) may be needed to gain a sufficient understanding of the problem. Research questions can also be defined at this stage. The problem definition for the case project can be broadly defined as: 'The impact of the clothing industry is too large and needs to be reduced by changing consumer behaviour'.

Target group definition
Secondly, the target group needs to be defined. Interventions created for a specific target group have a higher chance of being successful (Rau et al., 2022).

Defining sustainable behaviours
During this step, an overview needs to be made of the behaviours which could be (more) performed by the target group to reduce the problem. Research (E.g., literature research or expert interviews) may be needed to define all these behaviours.

Finding the change potential and potential environmental gain
The CP and PEG will be used to select which behaviours will have the most impact when performed (more) by the target group. The CP shows which percentage of the target group is open to start implementing a behaviour, which could make an intervention more effective, and the PEG shows how much environmental impact the execution of a behaviour will have. The CP can be found through a survey in which the 'willingness' and 'performance' of each behaviour are asked. The PEG of each behaviour can be found through measurements, literature research, or expert interviews.

Selecting focus behaviours
The CP and PEG will now be used to select behaviours to be focussed on during the rest of the project. Behaviours with a large CP and PEG are the most interesting since interventions created for those are more likely to have a high impact. It can also be decided to include behaviours with a lower PEG but high CP, or a low CP but high PEG, depending on the available resources (researching more behaviours will require more effort, time, etc.). Behaviours with a low CP and a low PEG are best to be excluded.

Finding barriers
After selecting the focus behaviours, it is essential to identify what prevents the target group from performing them. According to the COM-B model, an individual needs to have enough capability, opportunity, and motivation before they will perform a behaviour, so target group research is needed to discover which of these factors is missing. Barriers to performing certain behaviours may be found in literature or through expert interviews, but it is most important to ask the selected target group about the barriers they experience through questionnaires and/or interviews.

Listing intervention objectives
To create an overview of the information gathered during the research phase, a list of 'Intervention Objectives' (IOs) can be made. An IO describes what can be improved upon or designed to increase the performance of a behaviour, based on the barriers which were found during the research phase. It is possible that multiple barriers can be combined into one IO (E.g., when multiple behaviours share a 'lack of skills' as a barrier, these can be addressed collectively through the IO 'Teaching the target group required skills'), or one barrier may be translated into multiple IO, in case it can be reduced in multiple ways.

Brainstorming
The next step is to generate concepts for interventions based on the Intervention Objectives. Behaviour change strategies should form the basis of these interventions, to increase the chance of them being effective. But as usual for brainstorming activities, the quantity of concepts is more important than the quality, to generate creative ideas. The target group and other important stakeholders can be included during the brainstorming sessions

Concept(s) selection
To save time, a pre-selection of concepts can be made before the first evaluation, based on the expected feasibility, potential effectiveness (based on the used behaviour change strategies) and the addressed barriers.

Evaluation

The selected concepts should be evaluated on various subjects; Whether they are feasible, whether they contain ethical issues, and whether there is a risk of them having negative outcomes. Furthermore, the target group, experts, and other important stakeholders should be able to give their opinions about the intervention. Based on these factors, a smaller selection of concepts can be made.

Testing

There are many factors which influence behaviour, and behaviour change is a complex matter. Therefore, even after a thorough evaluation, behaviour change interventions should always be tested on effectiveness before they are implemented. This can for example be done by testing a prototype in a simulated setting or by testing a prototype in a real-life setting. The most important thing is to measure which effect the intervention has on the behaviour of the target group.

Implementation

In case one or multiple concepts prove to be effective during the testing phase, they can be realized and implemented. As discussed in section 4.5, a combination of interventions is often more effective than a single intervention. Therefore, multiple interventions can be implemented if each proves to be effective individually, or if they are found to be effective when used together.

5.2 OBJECTIVE FOR THE CASE PROJECT

The IBIS method will be used to create concepts for effective interventions for making the clothing consumption behaviour of the Frisian population more sustainable. This project will act as a case study with which the method can be tested, evaluated, and improved.

Due to constraints in time and resources, the method will be followed only until the evaluation phase. After this, the method will be evaluated and improved based on the experiences gained during the project. In case this method proves to be an effective approach, it can be used to create impactful behaviour interventions in future sustainability projects.

6 PROBLEM AND TARGET GROUP DEFINITION

As was discussed in the introduction, the problem for this project is defined as 'The environmental impact of the clothing industry is too large.' Changes in consumer behaviour are needed to reduce this impact, which is why behaviour intervention design is needed.

The target group consists of inhabitants of Friesland since the FMF wants to implement the intervention in Friesland at first. If it proves to be successful, it can be implemented in more regions afterwards. The target group may be more defined based on the survey results and may depend on the behaviours which will be selected, but to gain a large number of respondents for the survey, the target group is kept broad for now.

7 DEFINING SUSTAINABLE BEHAVIOURS

7.1 WHICH BEHAVIOURS NEED TO BE IMPROVED?

R-Ladder
Before any behaviour change design can be done, we need to determine which behaviours can changed to make the consumption of clothing in Friesland more sustainable. A well-known method to rank sustainability actions is the R-ladder. This gives an overview of the types of action which can be done to reduce environmental impact and ranks them in order from most to least impact. Milieu Centraal (n.d. -a) defines the following R-ladder:

- Refuse (to consume less)
- Rethink (Intensifying product use, e.g., by sharing)
- Reduce (to reduce material use)
- Re-use (reusing products as they are)
- Repair
- Refurbish (repairing or renewing products)
- Remanufacture (using parts of an old product to make something new)
- Repurpose (giving something a new purpose
- Recycle
- Recover (Recovering something from trash, e.g. energy from incineration)
- Substitute (Using more sustainable materials)

Groningen Fair Fashion (2023) defines another R-strategy, which they place at the top of the ladder: 'Rebel'. This means activating others through activisms, expressing opinions, and by openly acting against environmental issues.

Not all these actions can be performed by consumers when it comes to clothing. For example, consumers have no influence on the reduction of material used during clothing production and recovering energy from incineration after disposal. However, many of these strategies can be used by consumers to reduce their environmental impact. The next section will define which behaviours can be performed by consumers, and which R-ladder strategy they relate to.

Sustainable clothing consumption
The following infographic gives a schematic overview of all the behaviours a consumer can perform, and choices they can make regarding their clothing consumption. The green lines represent sustainable choices and the red lines unsustainable choices they can make. Creating this visual overview helped with identifying additional behaviours and served as a useful tool for verifying that all sustainable behaviours were considered. It also illustrates which sustainable behaviours are connected, and at what moments substantiable choices can be made.

Figure 10: Clothing behaviours overview

The best thing someone can do to make their clothing consumption more sustainable is to consume less clothing. This will cause less use of (raw) material, less transportation, and less trash. In Dutch, the term 'Consuminderen' (to consume less), can be used to describe this behaviour.

Other behaviours can also lead to a reduction in clothing consumption. Better quality clothing can be worn more often before it gets worn out, which means less new clothing needs to be purchased. When donated, good quality clothing can be reused more often (*M. Smedinga (ReShare), personal communication, October 13, 2023).* Another aspect of quality clothing is 'timelessness'; Clothing, which is deemed timeless can be used longer since it has a longer 'social lifespan'. (Rebel, 2023)

Buying clothing second-hand instead of new reduces the need for new clothing and lengthens the lifespan of existing items and selling or donating unworn clothes allows for them to be reused or recycled, instead of trashed. Repairing damaged clothing lengthens their lifespan and renting or borrowing may reduce the need for new items too.

Buying clothing made from sustainable raw materials (e.g. bamboo) or recycled fabric causes less environmental impact than clothing made from unsustainable raw materials. Clothing made from mono-materials (one type of fabric) is recyclable (Fibersort - Wieland Textiles, 2022).

The following 8 sustainable behaviours are thus defined:

1. Buying less clothing (Refuse)

2. Buying better quality clothing (Rethink, Re-use)

3. Buying second-hand clothing (Re-use)

4. Buying sustainable materials (Recycle, substitute)

5. Selling or donating unworn clothes (Re-use, recycle)

6. Renting clothing (Rethink)

7. Borrowing clothing from acquaintances (Rethink)

8. Repairing damaged clothing (Repair)

During the rest of the research, we will focus on these eight behaviours.

8 CURRENTLY KNOWN INFORMATION

In addition to gathering new information during the target group research, a literature review has been performed to gather already existing information about the behaviours (E.g., information about the context and barriers found by other studies). This section summarizes the information found during literature research and expert interviews, sorted under the corresponding behaviour. This information will later be used to create Intervention Objectives, together with the information which will be found during the target group research.

8.1 BUYING LESS CLOTHING

According to Maldini et al. (2017), the average Dutch consumer has 173 items of clothing in their closet, of which 30% is unworn, and buys 46 items per year on average. (It should be noted that this data is based on a small focus group of 50 participants. Maldini herself suspects the average amount of owned clothing is much higher) (Rebel, 2023).

According to Coscieme et al. (2022, as cited in Koch et al., 2023), the purchase of new clothing should be reduced to 5 items per person per year to be able to reach the maximum global rise in temperature of 1,5 degrees. This means that the average amount of new clothing bought per year needs to be lowered by a great amount.

Many barriers to this behaviour are mentioned in other literature. As mentioned in the introduction, the availability of cheap fast fashion, and the desire of consumers to follow the ever faster-moving trends, lead to a great amount of overconsumption. (D&B, 2020) (Rebel, 2023) According to D&B (2020), habitual behaviour (shopping for clothing) and the desire for a good image (by wearing new clothes) also work against the motivation to consume less. Behavioural researcher S. Postma (milieucentraal, personal interview) mentioned impulse purchases as another important barrier to sustainable behaviour; Buying an item without planning to do so in advance.

Kwon et al. (2020) describe boredom as an important factor. Boredom (or satiation, habituation) happens for nearly every type of consumption; The joy which a new item gives eventually fades, which is a barrier to long-lasting enjoyment. The strength of this phenomenon depends on the situation and the product. More frequent consumption can lead consumers to be easily bored by their owned clothing, which leads to more frequent consumption. Clothing being old and worn out, out of fashion, or not fitting to one's age or social standing anymore, can all lead to boredom towards these items.

TNO (2023, as cited in Rebel, 2023) defines 7 barriers to reducing consumption:

1. Our physical and social environment does not motivate sustainable behaviour. Excess consumption is seen as normal, and opportunities to buy are widely available.
2. Purchasing new items gives (short-term) pleasure, which is often made use of in marketing
3. Consuming less can feel like a loss. The theory of 'loss aversion' teaches that the pain of losing is stronger than the pleasure of gaining the same.
4. Sustainable behaviour in one area can lead to less sustainable behaviour in another area. TNO mentions the effect of Moral Licensing; People often allow themselves to act less sustainably after they have performed a sustainable action. A phenomenon related to this is the 'Negative spill-over effect', which happens when the availability of sustainably technologies and resources leads to more unsustainable behaviour (e.g., when consumers use more resources if they know that they can be recycled) (White et al., 2019)
5. The rebound effect: Time and money saved by decreased consumption in one area can cause an increase in consumption in another area.
6. Retailers have no interest in reducing consumption, which leads to protests and lobbying.
7. Growing production and economic growth are seen as necessary for our future.

Motives for reducing consumption, on the other hand, could be environmentally based, but also economic (saving money). J. Barkel (Saxion textile studies, personal interview) mentioned that to motivate people to buy less clothing, one has to give them fewer options. However, retailers still have to earn a profit. He explained that with shorter production chains, producers can make better predictions about what people are looking for. Normally, a production cycle (from raw materials to clothes) can take up to two years, which means that producers must predict future fashion trends. Shorter production chains can make this prediction more accurate and will cause less unsold clothing to be wasted.

Barkel also mentioned possible future scenarios like a digital avatar which can be used to buy 'made to order' clothes in one's exact size, and 3D printing of clothes to personal size, to reduce the amount of unsold clothing.

8.2 BUYING BETTER QUALITY CLOTHING

The fast fashion industry is currently one of the largest industries in the world, with a market value of 406 billion dollars. Fast fashion is marked by cheap clothing made to be disposed of after only a few uses. It is made with the expectation that it is used less than ten times. (Wiebke, 2020)

Cheap and fast production in developing countries allows fashion retailers to produce and sell clothing for bargain prices, which has increased the popularity of discarding an item after wearing it only a few times (Wiebke, 2020). It allows consumers to follow the fast-moving trends, and to collect a great variety of items in their closet. The bad quality of the items is often accepted because of the low prices (Bode, 2016).

According to J. Barkel (Saxion textile technologies, personal interview), all retailers (also high-end brands) use the same tricks to save costs; They use cheaper materials, reduce the amount of material used (thinner fabric) and reduce the number of stitches (This can save miles of thread for large batches). All of which reduce the quality of the clothing.

According to M. Smedinga (ReShare, personal interview), bad quality fast fashion is one of the main issues faced by the reuse market. Donated items of this type are often in such a bad state (often after

only a few wears) that they cannot be reused anymore. This problem is becoming more prominent because of ultra-fast fashion bands (such as SHEIN) who produce low-quality clothing for very low prices.

The quality of clothing influences its technical lifespan, and on how often consumers need to buy new items. According to Koch et al. (2023), the average age of clothing at the time of disposal is 5,9 years, and the number of times an item of clothing is worn has declined by 36 percent in the past 15 years, (United Nations Environment Programme, 2021) while consumers bought 60% more clothes (Kwon et al. 2020).

However, there is a growing amount of people criticizing the fast fashion market, both online and offline, and some people and organizations are actively protesting the environmental and humanitarian problems it causes, like 'Remake our world' (see appendix 3) but they are battling against the marketing giants of the fast fashion world (M. Smedinga, personal interview).

Barkel explained that to motivate people to buy better quality clothing, you have to teach them what to look for, give them a way to recognize quality clothing (e.g., a sustainability label), or show them how they are being manipulated, in an accessible way (e.g., like the Dutch tv program 'keuringsdienst van waarden'). He said that when people know they are being manipulated to buy something, they can make better choices.

Barkel also mentioned a scenario in which stores are forced to offer fewer options for higher prices. According to him, this would increase the value people attach to clothing (which could lengthen its use phase). When asked if consumers would dislike this, he answered: "If they did not have so much choice, consumers would be more satisfied with what they have and add more value to each product."

To be able to create a quality label, criteria need to be determined, like the minimum number of stitches per length of seem, or the minimum weight of the fabric. However, Barkel also warned that the sustainability of quality clothing is debatable, since, for example, a thicker fabric may produce a more durable item, but more raw material is needed as well. According to him, the clothing industry is therefore still in debate about which type of garments can be called 'sustainable'. However, when people attach more value to their clothing, they may be more inclined to take to care of it, to repair damages, and to not dispose of it until it is completely worn out.

8.3 BUYING SECOND-HAND

According to Farrant et al. (2010), the purchase of 100 second-hand items saves between 60 and 85 new clothing items, and Yan et al., (2015) also suggest that the availability of second-hand products can reduce the demand for new items. Adding three months of use to a garment's lifespan is estimated to reduce its carbon, water, and waste footprint by 5%-10% (Kwon et al., 2020). Promoting the reuse of garments can thus significantly reduce the environmental impact of the clothing industry.

There has been a consistent growth in the second-hand clothing market (Yan et al., 2015), and it is expected to grow 3 times faster on average than the global market overall (Wiebke, 2020). According to Smedinga (Reshare, personal interview), second-hand clothing is 'Hot and happening', and they have to invest less effort in convincing people to choose second-hand than they used to, although many people still need convincing.

In the Netherlands, mainly young adults buy second-hand. According to Motivaction (2021, as cited in Milieucentraal, 2023), 48,1% of people aged 18-20, and 46,1% of people aged 21-25 buy second-

hand often, while 74% of Dutch consumers between 16 and 40 say to sometimes buy second-hand. Other research says that 33% (Ipsos, 2020), 35% (ABN AMRO, 2019), or 37% (D&B, 2020) of the Dutch population buys second-hand. 18-37-year-olds adopt second-hand clothing 2,5 times faster than other age groups (Wiekbke, 2020). T-shirts are the most often bought second-hand item, followed by jeans and jackets (Milieucentraal, 2023).

The map below shows the amount of second-hand clothing stores (and tailors) compared to the amount of conventional clothing in Friesland. As can be seen, second-hand stores are widely available but are only a small part of the total amount of clothing stores. (A larger version of the map can be found in Appendix 1)
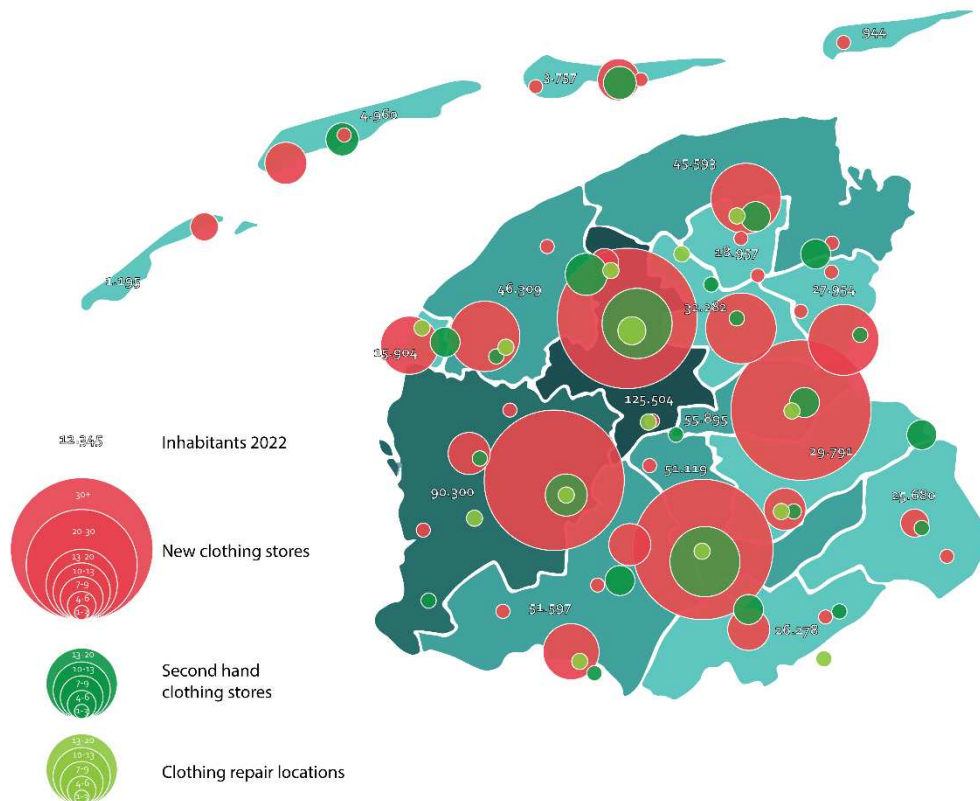
Figure 11: (Alle Kringloopwinkels - Kaart, n.d.) (Demografische Overgang in Fryslân - Planbureau Fryslân, 2023) (Alle Sectoren En Branches in Friesland Op De Kaart, n.d.)

Some retailers, such as Zalando, have started to sell used items themselves. There are many advantages for retailers who sell used items, such as increased sustainability, revenue, and brand loyalty (Wiebke, 2020).

Wiebke (2020) divides shoppers into 3 segments; Self-consumers, social-consumers, and sacrifice-consumers. The first group is mostly interested in hedonistic needs, and often shops for pleasure and entertainment. The second group attaches the most value to their social image, and the last group consists of eco-conscious shoppers who try to reduce their environmental impact. Consumers belonging to either of these groups may have specific motivations for wanting to buy second-hand, or reasons why not.

Yan et al. (2015) mentioned various motivations for consumers to choose second-hand over new items. Some people may be looking for unique items which can not be found new, or to create a

'vintage' look. Others see second-hand shopping as a pleasurable or adventurous experience. Sacrifice-consumers may mainly have environmental motivations. Although the main reason for many consumers is the lower prices, it is now often a deliberate choice.

Yan et al. (2015) also mentioned multiple barriers to consumers that prevent them from choosing second-hand, such as a lack of availability and concerns consumers have related to their self-efficacy; They lack confidence about being able to find what they seek. Another barrier is hygiene concerns. Consumers are less likely to buy an item when they know other people have worn it or tried it on. It is therefore important for stores to ensure consumers that the clothing items are clean (D&B, 2020) (Yan et al., 2015). People who have experienced or are experiencing poverty are less likely to buy second-hand because they relate second-hand goods to poverty. They can feel embarrassed about buying second-hand items. Other people may feel hesitant to buy second-hand because of the association with poverty as well (Yan et al., 2015).

One last thing to note is that, although the terms are used interchangeably, 'vintage' does not equal 'used'. Vintage' officially means clothing items originating from and in the style of a bygone era (1920s to the 1980s). Vintage clothes are not always used, and used clothes are not always vintage, although this is commonly assumed. Second-hand shops tend to call themselves 'Vintage' because of the positive associations with the word (Yan et al., 2015).

8.4 BUYING SUSTAINABLE MATERIALS

Next to reducing the amount of clothing on the market, and lengthening the use phase, making clothing out of materials with a smaller environmental footprint also reduces the impact of the clothing industry.

Currently, many unsustainable raw materials are used to make clothing, such as cotton (which uses a lot of water) and polyester (which causes water pollution due to microplastics being released with each washing cycle). Sustainable fabrics can, for example, be made from organic linen, plant-based 'leather', Lyocell, organic hemp, bamboo, or recycled materials.

Linen is a durable fabric, it uses less water than cotton, requires no use of pesticides or fertilizer (when organic), and grows in poor-quality soil (Srauturier, 2024). Growing it even has a positive influence on soil health. (Johnes, n.d.). When unbleached (a process needed to create a white fabric), it is fully biodegradable (Srauturier, 2024).

Plant 'leather' can be used as an alternative to real leather or 'leather' made from plastics. It can, for example, be made from pineapple leaves, which makes it much more sustainable than real leather. (Johnes, n.d.)

Lyocell is made from cellulose from wood pulp, and requires less water and energy to produce, compared to cotton, and the chemicals used during the production are used in a closed loop cycle, which reduces dangerous waste. (Srauturier, 2024).
Hemp can be grown everywhere and requires very little water, no pesticides, and no fertilizer (when it is organic).

Cotton production uses large quantities of water and is responsible for 22.5% of the amount of insecticide used worldwide. Organic cotton uses no harmful chemicals, and farmers use water more responsibly (Jones, n.d.). However, it was recently discovered that many clothes with an organic cotton certification may not be rightfully certified. According to The New York Times (as cited by

Srauturier, 2024) the certification system has many opportunities for fraud. Therefore, it is hard to say whether this can be called a sustainable fabric.

Recycled materials, such as recycled cotton and recycled wool, reduce the need for raw materials for clothing production. Synthetic materials can also be recycled to make new fabrics, but this type of fabric sheds microfibers when washed, and causes water pollution.

According to J. Barkel (personal interview), recycling mixed materials (e.g., 80% cotton, 20% polyester) is almost impossible, since the technologies to separate these materials are not reliable yet. He also said that the labels in clothing that contain the materials and their percentages are not reliable, which means that recycling centers must scan the fabric to be certain about its contents. However, this technique is also not reliable yet, which leads to impure materials in the production chain, leading to problems in the production of new clothing. Barkel also mentioned that recycling technologies are currently being improved, but that the current quality of recycled materials is low. There are differences in colour across items from the same collection, and the colour is less intense. However, he thinks consumers would not mind this if this became the new norm.

One of these new recycling technologies is Fibersort. This installation uses 3D scanning and spectrograph technology to analyse fabric composition, which allows it to sort clothing into 45 categories based on colour and material. It can recognize several blended materials, but it is not able to sort clothing made from multiple materials (e.g. lined coats) (Buiter, 2020) (Fibersort - Wieland Textiles, 2022)

Buiter (2020) from Fibresort wrote: "The main difficulty we are facing, is to align our categories to the market demand because there is still a limited end-market for recycled content. The technology is there, but now we need the market to make a shift to recycled materials."

Thus, buying clothes made from sustainable raw materials reduces one's environmental impact, buying clothes made from mono-materials makes recycling more available, and buying clothes made from recycled materials reduces the amount of waste and need for raw materials.

Many brands use claims like 'sustainable' and 'green' to promote the sustainability of their products. However, these terms are often vague and can therefore be misleading for consumers. The Dutch Authority Consumer & Market (ACM, 2023) argues that consumers need to have the right information to make sustainable choices. Therefore, they have created a list of 5 'rules of thumb' that clothing producers must follow to make accurate sustainability claims.

1. Use correct, clear, specific, and complete sustainability claims
2. Use up-to-date facts to substantiate sustainability claims
3. Use fair comparisons with competing products
4. Describe concrete and measurable future sustainability goals
5. Make sure visual claims and labels are helpful for the consumer, and do not cause confusion

8.5 SELLING/DONATING UNWORN CLOTHING

Selling or donating reusable clothing may extend their lifespan and donating damaged items allows the textiles to be recycled. According to Ffact (as cited in Rebel, 2023), 45% of unwanted textiles in the Netherlands are donated, and 55% is trashed. According to Rijkswaterstaat (as cited in Rebel, 2023), 29% of all trashed clothing would be useable for reuse, and 30% for recycling, which means

that a reduction in in trashed clothing could have a positive impact on the environment. Of the donated clothing 53% is reused, 33% is recycled, and 14% is incinerated (Rebel, 2023)

Personal resale of clothing seems to be not considered in these statistics. According to D&B (2020), 43% of the Dutch population sells worn clothing themselves (e.g., via Vinted). The most important incentive for people to sell their clothing is earning money (D&B, 2020).

Boredom is mentioned as one of the main reasons for clothing disposal, besides damages, improper fit, fashion, and a lack of storage space, and people tend to keep items they have developed an emotional attachment to longer, or pass them on to someone they know, instead of discarding them (Kwon et al. 2020).

According to Smedinga (ReShare, personal interview), donations have declined in the past few years. She expects that this is partly because of the coronavirus pandemic, during which many people cleared out their closets (they received huge amounts of clothing during this time), and partly because of fast fashion. She mentioned that many people do not know that damaged clothing can be donated for recycling (fast fashion items are often damaged at the time of donation), and that the quality of fast fashion is so low that people do not think it is worth donating. She mentioned that ReShare would be able to process many more donations.

Another problem recycling organizations face is the amount of trash thrown into clothing donation containers, which ruins the clothing inside. According to Smedinga, this happens more in Leeuwarden than in smaller towns in Friesland.

According to Smedinga, the average quality of donated clothing is lower in Friesland than in the rest of the Netherlands. She speculates that this could be because of income differences. It could also be that unwanted high-quality clothing is sold by the consumers themselves more often.

For this behaviour to have a positive effect, it is important that donated textiles are reused and recycled, or in other words, that the behaviours 'Buying clothing made from recycled materials' and 'buying second-hand' are also performed. It is also important for companies and organizations to use donations ethically since the export of used clothing outside Europe causes environmental and humanitarian issues in those locations (S. Smedinga, ReShare, personal interview).

On July 1, 2023, a new textile law was introduced in the Netherlands, which is meant to stimulate the intake, reuse, and recycling of textiles. From that date, clothing producers (the ones who bring the clothes to the Dutch market, excluding second-hand clothing) have to register with the government. From 2024 onward, they have to report the volume of textiles they sell in the Netherlands, and from 2026 onward, they have to report the volume of textiles they reuse and recycle. In addition to that, producers become responsible for what happens to their textile products after use and have to enable consumers to donate their used items by organizing a free intake system (Ministerie van Algemene Zaken, 2023).

Each year, there will be an increasing minimum goal for clothing which needs to be collected for reuse (20% in 2025, 25% in 2026), an increasing minimum goal for textile which is reused (10% in 2025, 15% in 2030), and an increasing minimum goal for textile which is recycled (25% in 2025, 33% in 2030). Producers have to use more recycled textiles in their own products as well. Lastly, they have to report their progress to the government each year. (UPV textile, n.d.)

Recycling Network Benelux (RNB) criticizes this new law. They argue that the word 'prevention' is not mentioned in the proposal and that there are no limits on the amount of textile which is brought to the Dutch market each year. They also argue that there is no guarantee that the government can

enforce these new rules on producers. They plead for a 'prevention goal' which limits the amount of textile brought to the market, rules against lobbying by producers, and an independent organization for circular chain management (Buurman, 2022). According to E. Fledderus (Circulair Friesland, personal interview), many sustainable clothing companies agree that the law should be stricter and that the goals should be less far in the future.

8.6 RENTING CLOTHING

Renting clothing allows consumers to constantly change their wardrobe and follow the latest trends, without consuming fast fashion. Johnson et al. (2021), even call it a possible solution to fast fashion. However, this action only causes a reduction in environmental impact if fewer new clothing purchases are made, since consumers may only use it to add more choices to their wardrobe. They also argue that the method of transportation towards the rental facility may already nullify the environmental savings caused by renting the product if it is only used once, so they suggest letting consumers rent clothing for longer periods and convincing them to wear the rented items multiple times during the rental period. Consumers could also be motivated to use sustainable modes of transportation. They mention that rental businesses should only rent out clothing items with a long lifespan, to support the increased amount of usage.

Next to being able to change items more often, other motivations for renting mentioned are sustainability, experimentation with style, and saving closet space. Renting is now mostly done for occasion wear and formal attire (Mukendi et al., 2020).

Rebel (2023) names clothing rental as a possible alternative business model for companies that now rely on an ever-increasing amount of production. The company owns the product, which means it can keep making a profit from it. Rebel mentions that it may be an incentive for companies to make higher quality clothing (to lengthen the lifespan) and that it would make recycling easier.

Mukendi et al. (2020) also mentioned some barriers which may demotivate consumers to rent clothing. First of all, with the rise of online shopping, consumers can now buy clothing whenever and wherever they want. Renting often means they have to plan their purchases ahead, and sometimes wait for their turn when the item they want is already rented out. A lack of availability and renting time are barriers which require a change in behaviour. This may make renting a less tempting option than buying cheap clothes.

Consumers also need to take care of their rentals. Participants in the research performed by Mukendi et al. (2020) mentioned that they would feel unable to fully relax in rented clothing, as they would be afraid to damage or stain it. Since value is attached to ownership, renting may also not cause the same gratification as owning the product. Participants in the same research mentioned that they would not like to hand their clothes back after the rental period and that they prefer for it to feel 'theirs'. Renting may also not be able to replace the hedonistic pleasures of shopping

Other mentioned barriers are concerns about hygiene and quality (damages), and the price of rental compared to buying a new item. Renting as an option to try on clothing items is seen as a good option, although consumers may be hesitant to pay twice for one item. (Mukendi et al., 2020)
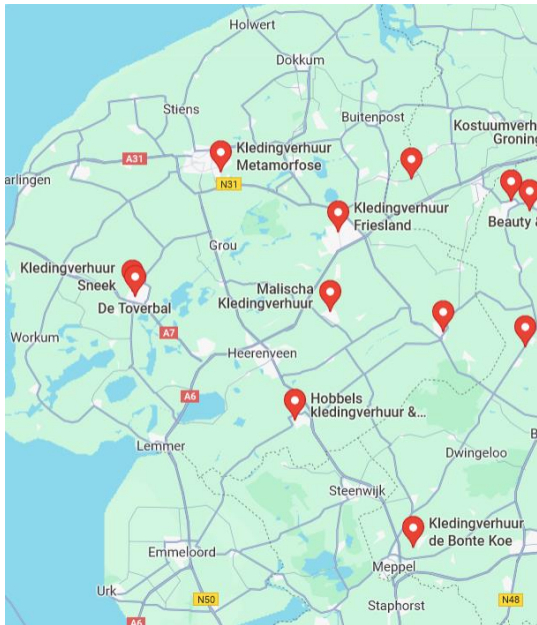
Figure 12: Google Maps image of clothing rental locations in and near Friesland

8.7 BORROWING/LENDING CLOTHING FROM ACQUAINTANCES

Sharing clothing could increase the number of uses during an item's lifetime, which reduces its relative environmental impact. It could also reduce the demand for new items if clothing needed for special occasions or one-time events is borrowed instead of bought (Klepp, 2018). But, just as with renting, this behaviour only has a positive impact if it reduces the demand for new clothing.

According to D&B (2020), 21% of Dutch consumers occasionally swap clothing with others. Sharing is often motivated by economic incentives but can also be motivated by the feeling of doing something kind (Klepp, 2018). Sharing could help maintain or even improve social relationships (Klepp, 2018) and is associated with pleasant feelings by making others happy (Grimshorn, 2015).

Due to the growing population and urbanization, people often have less storage space, which could also motivate to choose borrowing over buying. Additionally, rising awareness about the impact of overconsumption has made many consumers more open to sharing possessions. It could also be an active stance against mass consumption (Grimshorn, 2015).

Belk (1988, as cited in Grimshorn, 2015) argues that when objects become possessions, they become part of the owner's identity. This is called the concept of 'the extended self'. This extension can both be practical, in which objects help the owner to perform tasks, and symbolic, in which the object is used to construct a wanted image or sense of self towards others or ourselves. Belk argues that possessions define who we are and remind us of our history. Losing possessions which are seen as part of the self can cause strong negative feelings of loss, but a possession which has no positive associations or relation to the self can be disposed of easily. Consumers could be extra hesitant to share possessions with a strong positive association with the self.

Another barrier could be that borrowed clothing could cause a decreased sense of control, freedom, and security compared to owned clothing. Concerns about hygiene and damages could both be barriers to borrowing and lending (Grimshorn, 2015).

8.8 REPAIRING DAMAGED CLOTHING

Before the 1960s, mending damaged clothing was seen as normal. At that time, repairing clothing was more affordable than buying new. Historically, clothing was even specifically made with the need to repair in mind, for example by creating removable sleeves. During the Second World War, a government lead 'make and mend' campaign promoted mending techniques using limited resources through educational leaflets and evening classes. After the 1960s, clothes became more affordable, removing the economic incentive for repair. Now, repairing clothing has mostly gone out of fashion in Western society (Gwilt, 2014)

In the past few years, there has been a rise in online and offline communities based on crafting (Gwilt, 2014). This has increased some people's interest in mending their own clothes. The term 'Visible mending' is trending both inside and outside of these communities (Rollot, 2023), and a yearly Instagram trend called #mendmarch challenges participants to create a repair artwork every day for a month. These movements are often an act of resistance against fast fashion and consumerism. (Rollot, 2023)

However, these community trends are not yet mainstream, and the dominant behaviour remains to discard damaged clothing. For many people, it is seen as unacceptable to wear visibly repaired clothing, due to the relation to poverty (Gwilt, 2014). Other barriers to clothing repair mentioned in literature are a lack of (sewing) skills, poor product design, repair services being too expensive (compared to buying new clothing), a lack of time and access to equipment, the habit of buying and disposing of clothes, and the feeling that clothing repair does not fit one's identity (Zhang et al., 2022). Gwilt (2014) mentioned the attraction of new, inexpensive clothes as the main barrier to clothing repair.

Some brands offer repair services, such as Bever and Patagonia. According to Zhang at al. (2022), this is highly appreciated by consumers and can increase the brand image and trust. They mention that a lack of trained personnel is an important barrier to companies, and that long waiting times caused by this reduces customer motivation.

Zhang et al. (2022) also suggest that the right to repair law, which is introduced for electronics, could be extended to clothing; *"The scheme could include durability and repairability disclosures or certifications, which provide information about the expected item lifetime under normal wear and tear, and whether the item is suitable for repair. (…) A step further could be setting minimum design standards for durability and repairability—this might change mindsets that repairing is worthwhile for all clothing."*

9 POTENTIAL ENVIRONMENTAL GAIN

The next step in the method is to choose impactful behaviours based on their Potential Environmental Gain and Change Potential. The CP will be discussed later. In this section, the PEG of each behaviour will be determined. It is outside the scope of this project to calculate the exact PEG for each behaviour, which is why the estimations of the PBL (Netherlands Environmental Assessment Agency) (Koch et al., 2023) are used as an indication. PBL has made these estimations based on the Environmental Analysis Program (EAP), and their own calculations and estimations.

Table 2 shows the PEG per behaviour as defined by Koch et al. (2023). The definition of each PEG number can be found in Table 1. Table 3 shows the PEG for each behaviour of this project, and on which the PEGs defined by Koch et al. (2023) are based.

PEG category	Climate impact	Emissions (kg CO2 eq./hh/year	Land use (m3/hh/year)
1	Non or negative	<10	<1
2	Small	11 - 150	1.1 15
3	Middle	151 - 300	15,1 - 30
4	Large	301 - 450	30,1 - 45
5	Very large	>450	>45

Table 1: PEG scoring table

Source number	Behaviour	Emissions (1-5)	Land use (1-5)	PEG (1-5)
1	Buying less clothing	3	5	4
2	Renting clothing via a platform or shop	1	1	1
3	Lending clothes to friends/family	1	1	1
4	Buying clothes made from sustainable material	2	1	1,5
5	Buying second-hand	2	3	2,5
6	Buying good quality clothing	2	3	2,5
7	Selling/donating for reuse	1	2	1,5
8	Repairing clothing	2	2	2
9	Buying clothes made from recycled materials	2	5	3,5
10	Donating damaged clothes for recycling	1	1	1

Table 2: PEG per behaviour as defined by Koch et al. (2023)

Behaviour	PEG (1-5)	Based on (source number(s))
1. Wearing clothes more before discarding	2,5	Assumption based on 6*
2. Renting	1	2
3. Borrowing	1	3
4. Lending	1	3
5. Buying second-hand	2,5	5
6. Selling	1,5	7
7. Donating (second-hand store)	1,5	7
8. Donating (container)	1,5	7
9. Not throwing away	1	10
10. Checking quality	2,5	6
11. Investing in quality	2,5	6
12. Repairing (self)	2	8
13. Repairing (helping others)	2	8
14. Repairing (Tailor)	2	8
15. Buying recycled materials	3,5	9
16. Buying sustainable materials	1,5	4
17. Buying mono materials	2	Assumption based on 9 and 10**
18. Buying less clothing	4	1

Table 3: PEG per behaviour

*It is assumed that wearing clothing more before discarding has the same result as buying better quality clothing; Clothing is worn more before it is damaged/before it is discarded.
**It is assumed that this type of clothing will be recycled more often when handed in, and therefore add to the availability of clothing made from recycled material. However, not all mono clothing will be recycled, which results in a lower assumption.

As can be seen, the behaviours 'Renting clothing', 'Lending clothing', and 'Donating damaged clothes', are given a PEG of 1, which means no impact or even a negative impact. However, according to other literature, these behaviours do have an impact on other behaviours. For instance, renting or lending clothing could decrease the demand for new clothing (see section 8.6 and section 8.7), and donating for recycling is needed once the demand for recycled material increases (see section 8.4). Therefore, these behaviours will still be included in the research.

10 SURVEY

To measure the change potential of the eight behaviours, and to find barriers to these behaviours, a survey was distributed amongst the Frisian population. This survey was filled out by 98 respondents. The main results will be discussed in this section. The full analysis of the results can be found in Appendix 4.

10.1 GENERAL INFORMATION

Apart from the questions about behaviour performance, willingness, and barriers to performing the behaviours, extra questions were asked to specify the demographics of the respondents, to learn more about the target group, and to ask for specific information regarding some of the behaviours. The results of these questions are discussed in this section.

Demographics

Out of the 98 survey respondents, most are female (68,4%), and the majority are higher educated (83,7). The age distribution is equal. 19 of the respondents are not a resident of Friesland, but for the sake of variety, their answers will be included as well. Most of the participants are residents in either the municipality of Leeuwarden (34,7%) or the municipality of Heerenveen (24,1%).

Sustainability

To measure the average affinity with sustainability of the respondents, they were asked to answer the following two questions on a scale from 1-10:

1. Do you think you live your life sustainably?
2. How often do you take sustainability into account during daily life?

The first question was answered with an average (mean) of 6.6/10 (St. Dev: 1.25), and the second question with an average of 6.9/10 (St. Dev: 1.62). This suggests that the respondents think of themselves as medium sustainable on average. It is unknown whether this is a good representation of the population of Friesland. Since the respondents are mostly female and highly educated (two groups who are known to be more concerned with sustainable living (Zhao, 2021) (Meyer, 2015), the average sustainability of the Frisian population might be lower. This question also only measures the opinion of the respondents about their sustainable lifestyle, not their actual footprint.

Knowledge about sustainability

To test the respondents' knowledge about the environmental impact of the clothing industry, they were asked to read the following text (here translated from Dutch), after which they were asked whether they already knew this, or if this was new information to them. (This was asked at the end of the survey, to not influence the answers to the rest of the questions).

"*The clothing industry is one of the most polluting industries in the world. The production of new clothes causes 8% of the global pollution, which is more than all international air traffic and shipping combined. The production of clothing is one of the most important causes of climate change, loss of biodiversity, and water, air, and ground pollution. Luckily, we can do something about this! By, for example, buying less clothing, buying more durable clothing, and buying more second-hand, we can make sure that less new clothing needs to be produced, and that less old clothing ends up in a landfill.*
If every Dutch person would buy 6 pieces of clothing less per year, this would save as much as going around the world by car 85.000 times! (milieucentraal)"

Most of the respondents did not know this (7%) or knew only part of this information (61%). These respondents were asked whether they would want to change their behaviour after receiving this information. 25% answered 'Yes, very much' and 60% answered 'Yes, a little'. Only 15% of the respondents did not want to change their behaviour after receiving this information. This suggests that providing information could be a good strategy for increasing motivation.

The participants who answered that they wanted to change their behaviour after receiving this information were asked which behaviour(s) they wanted to change. The most mentioned behaviours were 'buying better quality clothing', 'buying less clothing', 'Donating more clothing', 'buying more second-hand', and 'buying more sustainable materials'.

Opinions about clothing quality

For the behaviour 'buying good quality clothing' it is important to know what the target group sees as good quality. To measure this, respondents were asked for their opinion about the quality of a fast

fashion brand (H&M), 29% answered that they found this good quality, 35% thinks it is good enough for how often they want to wear it, and 71% thinks it is good enough for the price. Only 6% found the quality to be 'mediocre', and no respondent thinks the quality is bad. This suggests that most of the target group does not find fast fashion items (too) low quality, or that many accept the low quality because of the low prices.

10.2 THE CHANGE POTENTIAL

As explained in section 4.1, the Change potential is the willingness to perform a behaviour minus the performed behaviour. A high CP means that many people are willing to perform that behaviour but are not yet doing so. To calculate the Change Potential of the sustainable behaviours, the current performance and willingness of the participants to perform these behaviours need to be measured. Participants were asked to rate their willingness on a scale from never to always (translated to a 0-5 scale), and their performance on a scale from 1-8. The full analysis of these factors can be found in Appendix 4. The graph in Figure 13 shows the normalized performed behaviour and Change Potential of various behaviours which are part of the eight sustainable behaviours mentioned in section 7.
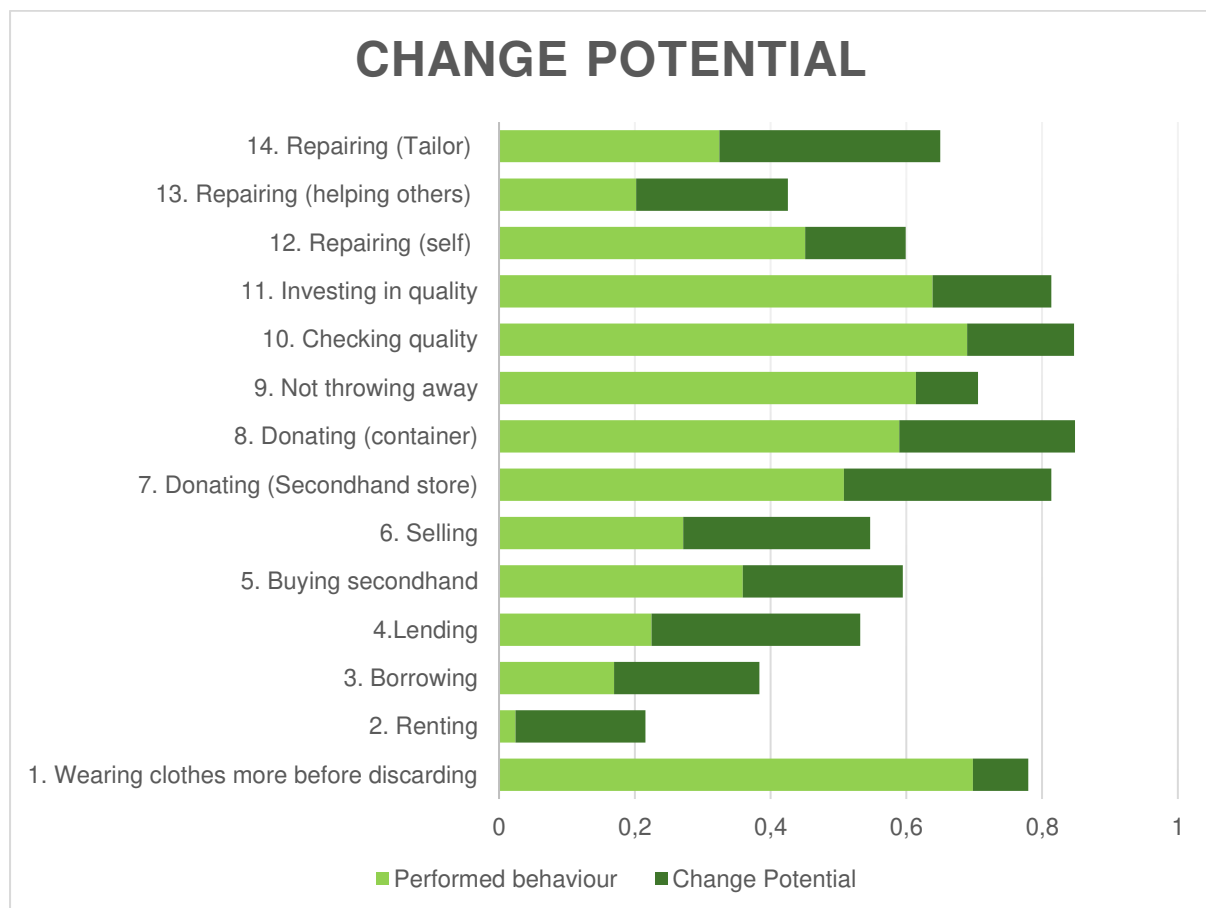
Figure 13: Change Potential graph

Figure 14 shows the CP of each behaviour ordered based on size. As can be seen, tailor repairing, lending, and donating at a second-hand store have the highest CP's, and 'wearing clothing more often', 'not throwing clothing away', and 'self-repairing clothing' the lowest. Note that these last three are not the least performed behaviours, but rather the behaviours that the fewest people, who are not yet performing them, are willing to adopt.
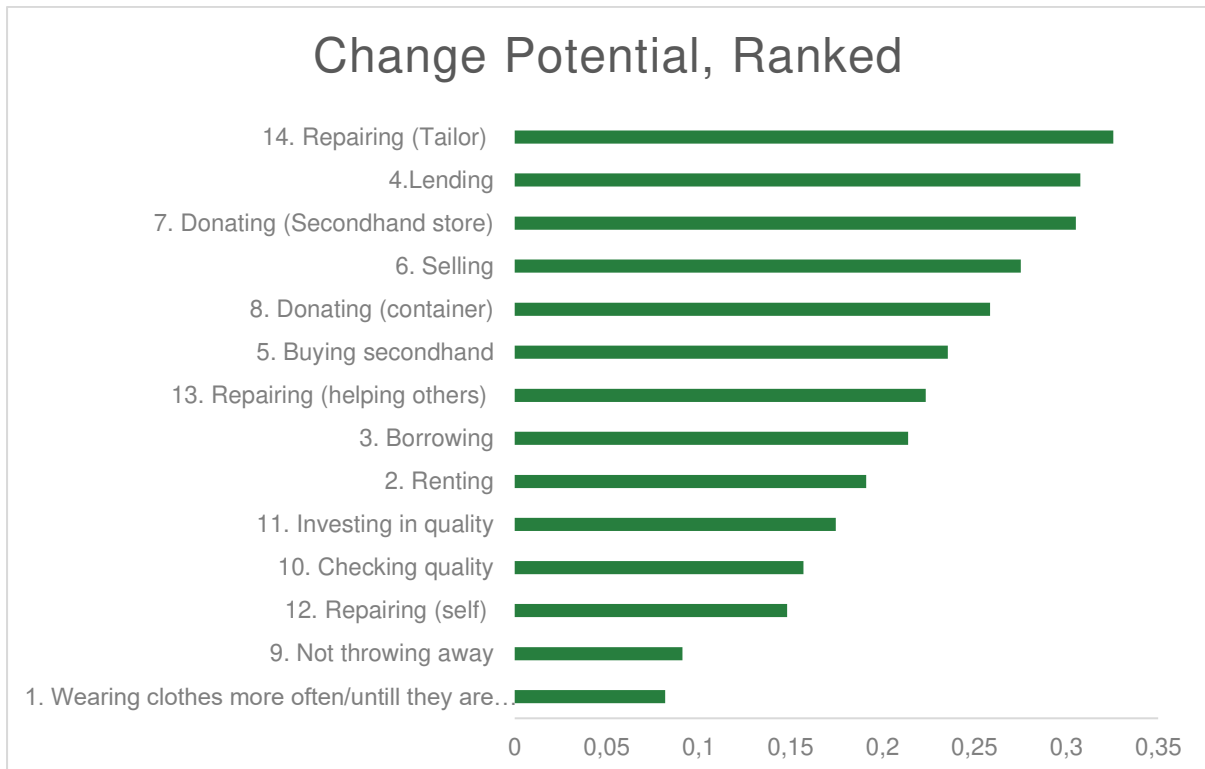
Figure 14: Change potential, Ranked

Additional behaviours

Two of the eight behaviours are not mentioned in this chart, namely 'Buying less clothing' and 'Buying sustainable materials'.

Buying less clothing has not been asked as a performed behaviour, because it is a question which cannot be answered like the other behaviours ('how often do you buy less clothing?'). The willingness of the respondents to buy as few clothes as possible has been asked. This was scored with a 6/8 on average (St. Dev: 1.7).

Koch et al. (2023) studied the number of Dutch inhabitants who are willing to buy less clothing. The score for the willingness to perform this behaviour can be used as the CP in this case, since this is the percentage of people who are willing to purchase less clothing than they currently do. Normally, the people who already perform the behaviour need to be subtracted from the amount of people who are willing to perform the behaviour, to end up with the people who are willing to perform a behaviour but are not yet doing it. In this case, how this question is asked causes the willingness to already be compared to the current behaviour. The score of 0,66 (66% of the participants) can therefore be used as the Change Potential for this behaviour.

'Buying sustainable materials' was added to the list of sustainable behaviours after the survey was distributed, which means that it was not asked in this survey. To get an idea of the change potential of this behaviour, a second survey was sent to the respondents of the first survey, which was filled in by 11 individuals. This data is therefore not as reliable as the data gathered from the first survey but can still be used as an indication of the Change Potential of this behaviour. Figure 15 shows the CP of three behaviours which belong to the overarching behaviour 'buying sustainable materials'.
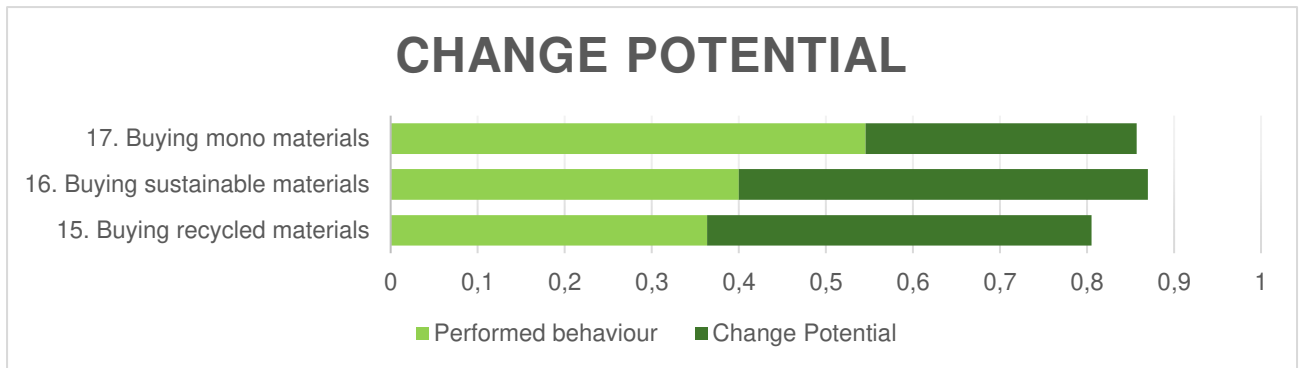
Figure 15: Change potential second survey (N=11)

Comparison with data from other literature
The PBL (Netherlands Environmental Assessment Agency) (Koch et al., 2023) has researched the Change Potential of sustainable behaviours as well. They analysed the Performed Behaviours by defining specific actions and asking the participants whether they do this (Yes/No). Idem with the willingness, by asking if they are willing to perform a specific action (Yes/No). Each question was answered by 303 to 4441 participants. The differences between their results and the results found during this study are discussed in the Appendix. Most of these differences were caused by differences in the formulation of the questions in both studies. As mentioned before, the results for the behaviour 'buying less clothing' from this study will be used as the CP for this behaviour during this study.

10.3 CP & PEG

To determine which behaviours behaviour should be chosen to have a higher chance of creating an intervention with a large impact, both the CP and PEG should be considered. The graph in Figure 16 shows both the CP and the PEG for each behaviour (See Table 3 for the behaviours assigned to the numbers). The behaviour with both the highest CP and PEG is 'Buying less clothing'. It should be noted that this data is taken from the PBL research (Koch et al., 2023), and is calculated in a different way than the other behaviours. Therefore, they cannot be compared directly. However, it can still be assumed that this behaviour has a high CP.

The data for behaviours 15, 16 and 17 (buying recycled, sustainable, or mono materials) is taken from the second survey, which was only answered by 11 people. This means that this is less reliable than the behaviours measured with the first survey (N=98). Since the CP measured in the PBL research for these behaviours is not reliable, the CP calculated during this research will still be used.

In section 11, the results of this survey (together with information found during the literature review) will be used to determine which behaviour would be most useful for the FMF to focus on.

Behaviour	CP (0-1)	PEG (1-5)
1. Wearing clothes more before discarding	0,081924	2,5
2. Renting	0,191254	1
3. Borrowing	0,213994	1
4. Lending	0,30758	1
5. Buying second-hand	0,235569	2,5

6. Selling	0,275219	1,5
7. Donating (second-hand store)	0,305248	1,5
8. Donating (container)	0,258601	1,5
9. Not throwing away	0,091254	1
10. Checking quality	0,157143	2,5
11. Investing in quality	0,174636	2,5
12. Repairing (self)	0,148105	2
13. Repairing (helping others)	0,223615	2
14. Repairing (Tailor)	0,325656	2
15. Buying recycled materials	0,441558*	3,5
16. Buying sustainable materials	0,470130*	1,5
17. Buying mono materials	0,311688*	2
18. Buying less clothing	0,66**	4

Table 4: CP and PEG of each behaviour

*Data taken from the second survey (N=11)
**Data taken from PBL research (See section 10.2)
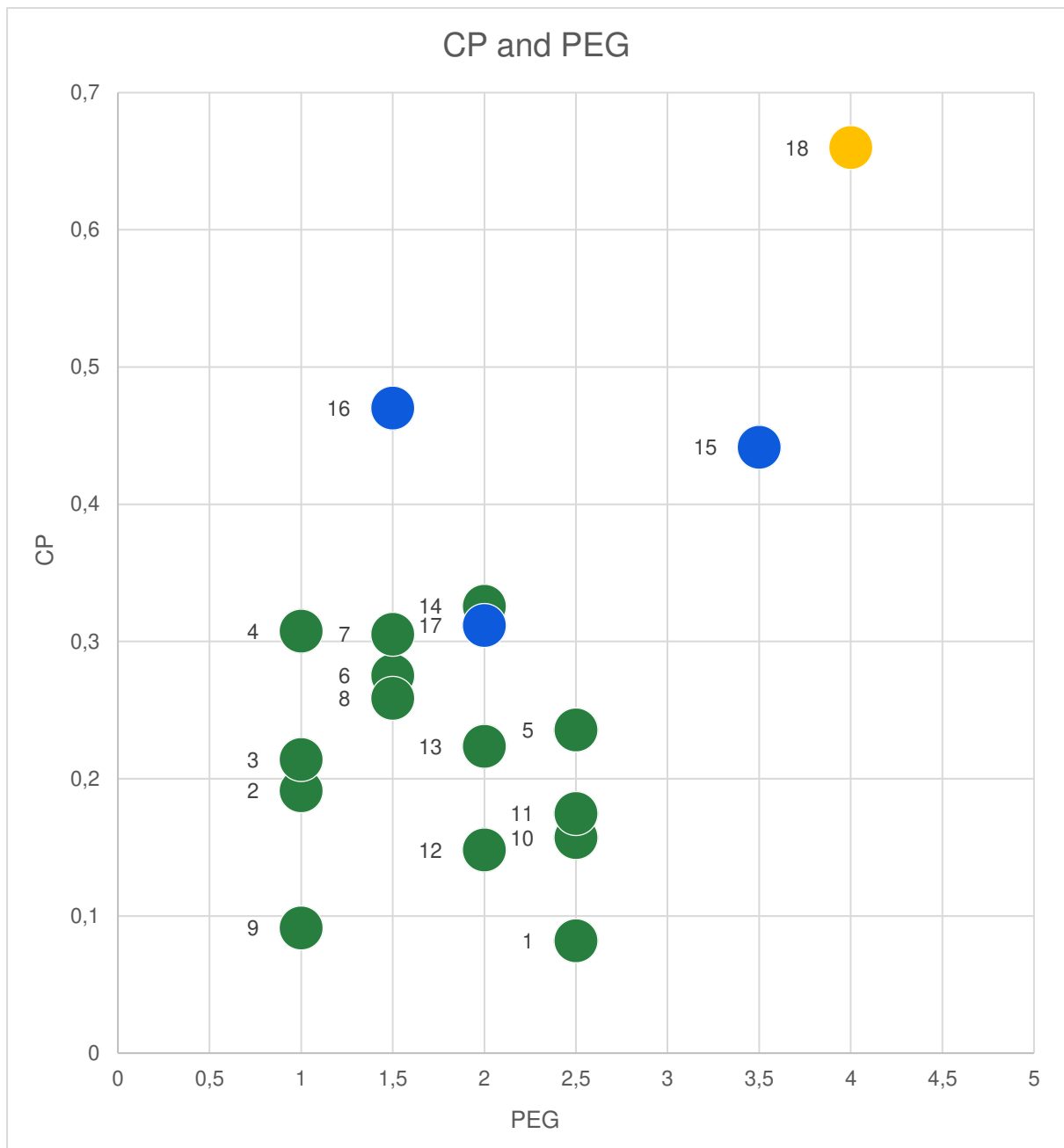
Figure 16: CP & PEG graph

10.4 BARRIERS TO BEHAVIOUR CHANGE

The respondents of the survey were asked to name barriers to the target behaviours with an open question: 'What would motivate you to perform this behaviour (more often)'. The results were coded (see Appendix 4) and divided into the three main COM-B sections. The following tables show each barrier which was mentioned three times or more times. The total amounts include all the mentioned barriers (including those mentioned less than three times) to show which COM-B sections are lacking the most according to the survey respondents. The full tables can be found in Appendix 4.

Buying less clothing

Coded barrier	Lack of...			
	Capability	Motivation	Opportunity	Positive/ideas
I already buy the minimum amount				20
Clothing needs to be better quality			12	
There need to be fewer social expectations			3	
There need to be less fashion trends			6	
Information about climate effects	4			
Less clothing advertisement	4			
Buying second-hand instead				3
I like buying clothes too much		3		
Being aware of owned clothing	3			
Total (including < 3)	12	11	25	34

Buying better quality clothing

Coded barrier	Lack of...			
	Capability	Motivation	Opportunity	Positive/ideas
I do this already				15
It is (too) expensive			17	
More good quality clothing available/easy to find			6	
price/quality balance needs to be right			4	
I buy good quality second-hand				4
More expensive does not mean better quality	6			
I need a way to see what good quality is	14			
Teach awareness	5			
It feels better to wear good quality				3

Total (including < 3)	30	4	37	28

Buying more second-hand

Coded barrier	Lack of…			
	Capability	Motivation	Opportunity	Positive/ideas
I do not want to do this		8		
I do this already				16
Second-hand stores need to be more attractive (like new stores)			5	
The quality is bad / needs to be checked better			5	
It needs to be affordable (not expensive vintage)			4	
Unhygienic/ it needs to be clean			6	
There needs to be more availability			9	
It needs to be easier to find			3	
I buy second-hand online				4
More promotion/awareness	3			
It is hard to find something my size			7	
Total (including < 3)	5	13	47	24

Buying more sustainable materials

Coded barrier	Lack of…			
	Capability	Motivation	Opportunity	Positive/ideas
It needs to be more available (recycled)			6	
Transparency / making clear what is sustainable	4			
It needs to be more available (sustainable fabric)			5	
It needs to be more available (Mono material)			5	
Total (including < 3)	9	9	18	2

Renting clothing

Coded barrier	Lack of…			
	Capability	Motivation	Opportunity	Positive/ideas
I do not want to do this		18		
I have no experience with this	3			
I do not know what for	4			
I am open to this				3
Only for special occasion clothing				16
It is too expensive (compared to buying)			4	
More awareness about the possibility	8			
It needs to be more available			8	
Total (including < 3)	**15**	**18**	**15**	21

Lending clothing

Coded barrier	Lack of…			
	Capability	Motivation	Opportunity	Positive/ideas
I do not want to do this		7		
I do this already				8
I am open to this				12
I would rather swap/give away				3
Stimulate swapping		3		
Make it a talking topic amongst acquaintances			3	
You need to have the same size			**4**	
Total (including < 3)	1	**10**	**10**	**26**

Borrowing clothing

Coded barrier	Lack of…			
	Capability	Motivation	Opportunity	Positive/ideas
I don't want to do this		15		
I do this already				4
I am open to this				4

49

	Capability	Motivation	Opportunity	Positive/ideas
You need to have the same size		5		
Permanently giving or swapping is preferred			4	
Total (including < 3)	**1**	**17**	**7**	**12**

Selling or donating clothing

Coded barrier	Lack of...			
	Capability	Motivation	Opportunity	Positive/ideas
I do this already				24
I throw away damaged clothes	6			
I did not know you could donate damaged clothing	9			
Teach people what / how to donate	9			
Selling takes effort		3		
Make donating easier/ more available			15	
Transparency about where it ends up	3			
Total (including < 3)	**27**	**4**	**15**	**24**

Repairing damaged clothing

Coded barrier	Lack of...			
	Capability	Motivation	Opportunity	Positive/ideas
I do this myself				24
I let this be done by a tailor				3
I am open to doing this				3
It needs to be more accessible/more available			10	
It needs to be cheaper than buying new			17	
It needs to be promoted as a good/affordable alternative to buying new	6			
I need to learn the skills needed to repair clothing	5			
Some clothing is hard to repair		3		
Total (including < 3)	**11**	**3**	**30**	**32**

50

11 SELECTING IMPACTFUL BEHAVIOURS TO FOCUS ON

This section will discuss the behaviours which are interesting to design for based on the CP and the PEG. Interventions created for these behaviours have the highest chance of making a large impact and will therefore be focussed on during the design phase of the project. This section will also include Intervention Objectives for each of the selected behaviours, which are objectives based on barriers found during the literature and target group research, for which interventions can be designed (see section 5.1). These will form the starting points for idea generation during the brainstorming phase.

Buying less clothing
CP: High
PEG: Highest

The average amount of items bought per person per year (46) should be reduced to 5 to reach sustainability goals. Solving the most mentioned concern "clothing needs to be better quality" might exceed the FMF's abilities, but they could, for example, assist people with choosing better quality clothing.

The issues "there need to be fewer fashion trends, less clothing advertisement, and less social expectations regarding clothing" mentioned in the survey, and the barriers of 'Highly accessible cheap fast fashion' and 'the desire of consumers to follow trends' mentioned in the literature review may also lay beyond the FMF's scope, but they could try to convince people to create their own style, or choosing timeless clothing, instead of following each new trend.

Informing people about the impact of the clothing industry seems to be a good tactic in general since 85% of the survey respondents are willing to change their behaviour after receiving this information. This may also affect the barrier of 'lobbying by the industry' mentioned in the literature review.

Something which can be addressed by design is "making people aware of the clothing they already own", which was mentioned a few times as an idea by survey respondents. This may incline people to think twice before they decide to purchase a new item. The norm of overconsumption, mentioned in the literature review, could also be addressed by design, as well as habitual consumption

Motivating people who experience buying new clothing as a hedonistic pleasure (a barrier mentioned both by survey respondents and in the literature) to change this behaviour might be more challenging. They could, for example, be guided towards 'buying more second-hand', and 'buying recycled materials', instead.

Intervention Objectives

1. Assist people with choosing better quality clothing
2. Convince people to create their own (timeless) style, instead of following trends
3. Inform people about the impact of the clothing industry
4. Make people aware of the clothing they own
5. Decrease the norm of overconsumption
6. Decrease habitual consumption
7. Guide 'hedonistic shoppers' towards second-hand or sustainable (recycled) clothing

Buying more sustainable (recycled) materials
CP: High
PEG: High (recycled), medium-low (mono, sustainable)

For all these behaviours, a lack of availability is mentioned as a main barrier. This could of course be solved by increasing the use of recycled materials (or sustainable/mono) materials in the clothing industry, but a more feasible approach would be to spread awareness about the brands that already produce clothing made from recycled materials and to spread awareness about the impact of choosing these types of fabric over raw materials. The survey participants ask for more information and transparency regarding sustainable fabrics, and providing information is also an effective tool for behaviour change.

Intervention Objectives
8. Increase the availability of clothing made from sustainable (recycled) material
9. Spread awareness about brands who produce sustainable clothing
10. Spread awareness about the positive impact of sustainable fabrics
11. Provide transparency and information about sustainable fabrics

Buying better quality clothing
CP: Medium-low
PEG: Medium

It should be noted that the quality aspects which determine sustainability still need to be determined. For instance, thicker fabric causes a longer lifespan but also uses more raw material. However, as stated in the literature review, motivating people to buy quality clothing may also cause an increase in the value attached to clothing, which may cause people to take better care of their own items.

'Checking for quality', 'investing in quality', and 'refusing to buy bad quality' are behaviours which many respondents of the survey claim to do already. However, most of the respondents do not see a fast fashion brand as bad quality. Therefore, it remains questionable whether people are critical enough regarding the quality of their clothing. As stated in the literature review and suggested by the survey, low quality is often accepted because of low prices.

Checking for and investing in quality clothing both have a high average willingness, which suggests that people can be convinced to be more critical about the quality of their clothing when given the right information.

This is supported by the fact that many participants of the survey mentioned 'being able to recognize good quality clothing' as the main barrier to this behaviour. Since higher quality clothing is often more expensive, but expensive clothing is not always high quality, they seek assurance that more expensive items will indeed last longer. Giving people a tool to recognize quality clothing might therefore be an impactful intervention. J. Barkel (Saxion textile, personal interview) confirmed this by mentioning that price is not an indication of quality and that people need to be taught how to recognize quality or given a tool which assists them with this (E.g., a quality label). He also mentioned that people need to be made aware of how they are manipulated and that stores need to be forced to offer fewer options and better quality.

Participants also mentioned that more awareness about the impact of this behaviour is needed, so providing information might be a helpful strategy

Many participants mentioned that good quality clothing is simply too expensive for them. Even with the right motivation and tools to recognize quality, some people will simply not be able to afford quality clothing. This group can instead be motivated to choose second-hand clothing (which is often very affordable), or affordable clothing made from sustainable or recycled materials. Other respondents said that good quality clothing needs to be more available.

Intervention Objectives

12. Teach people how to recognize good quality clothing
13. Give people a tool which helps them recognize good quality clothing
14. Make people aware of the tricks clothing brands use to reduce costs (and quality)
15. Make it the norm for brands to sell better quality clothing
16. Provide information about the impact of this behaviour
17. Make quality clothing more affordable
18. Motivate people who cannot afford quality clothing to choose second-hand or sustainable fabrics instead.

Buying more second-hand

CP: Medium-high
PEG: Medium

In the literature review, it is stated that the second-hand market is growing steadily and that a growing amount of people choose second-hand over new items. Depending on the research, about 35% of the Dutch population buys second-hand clothing. However, according to the survey, it is a little performed behaviour in Friesland with a medium to high CP, which makes it interesting to design for. However, this behaviour is only sustainable if it reduces the purchase of new clothing items.

Most of the mentioned barriers are people's perception of second-hand clothes and stores. Participants mentioned that the stores need to be made more attractive, that the quality of the clothing needs to be checked better, and that the store and clothing need to be clean. Hygiene concerns are also mentioned in other literature.

It can be debated whether these are actual issues which need to be improved upon, or whether the image of second-hand stores and clothing can be improved in another way. For example, by showing customers that clothing is washed before it is put up for sale. However, highlighting this might have a reverse effect, since it may increase the association between second-hand clothing and dirtiness. The needed amount of improvement for the attractiveness of the store and the quality of the clothing will differ per store. Further research can be done about what makes a second-hand store attractive to consumers.

A lack of availability is mentioned often by the survey respondents, as well as in the literature review. Yan et al. (2015) mentioned that a (perceived) lack of availability can impact consumers' feelings of self-efficacy. As can be seen on the map in Figure 11 in section 8.3, the number of second-hand stores does not measure up to the number of regular clothing stores in Friesland. Especially in less densely populated areas, second-hand stores are rare. However, even without physical stores nearby, second-hand clothing is still widely available online (E.g., via Vinted). It can be debated whether a lack of availability is the barrier or rather a lack of knowledge about where to look for second-hand

items. If the latter is the case, people could also be assisted better with finding second-hand items in their taste and size.

A barrier mentioned in literature which was not mentioned in the survey is the association with poverty some people might have, especially individuals who have experienced poverty themselves. Changing this association to something positive might increase motivation.

Intervention Objectives

19. Make second-hand stores more attractive (clean, good quality items)
20. Show consumers that second-hand clothing is washed (might have a reverse effect, this needs to be researched)
21. Make second-hand clothing more widely available
22. Help people find second-hand clothing
23. Change the association with poverty to something positive

Repairing

CP: Medium (self), Highest (tailor)
PEG: Medium-Low

The most mentioned barrier in the survey is the price of (tailor) repair. Participants mention that it is expensive compared to buying new clothing, something which is also mentioned in the literature review. Repairing should therefore be made cheaper, or the perception of consumers needs to be changed by promoting repair as an affordable alternative to buying new clothing.

Another barrier mentioned in the survey is the lack of available tailor shops, however, this barrier could also be a perceived lack instead of an actual one. The literature review, on the other hand, mentions a lack of time and equipment for self-repair. Both the survey respondents and other literature mention a lack of sewing skills, which prevents people from repairing clothing themselves.

Other barriers mentioned in the literature review are the attractiveness of new and inexpensive clothes, poor product design, and the association with poverty. Zhang et al. (2022) mentioned that the right-to-repair law (now introduced for electronics) should be extended to clothing, which would include information about the expected lifespan and repairability of an item, or even minimum quality and repairability standards.

Intervention Objectives

24. Make (tailor) repair more affordable
25. Promote repair as an affordable alternative to buying new clothing
26. Make tailor repair more available/accessible, or spread awareness about existing possibilities
27. Provide equipment for self-repair
28. Teach sewing skills for self-repair
29. Make repair the new norm through positive associations
30. Make sure clothes are designed with repair in mind (right to repair law)

11.1 LEAST USEFUL BEHAVIOURS TO FOCUS ON

Renting, borrowing, and lending clothing
According to PBL, all these behaviours have a PEG of 1, which means no impact or even a negative impact. Therefore, it is less useful to focus on these behaviours.

It is unclear whether PBL saw these behaviours as a substitute for buying clothing which will be used regularly, or as a substitute for buying new clothing for one time (or a few times) use (like special occasion clothing). In the first case, it is logical that these behaviours have no environmental impact since clothing which is owned individually can be used just as often as clothing which is rented or shared between multiple people. However, these behaviours can have an impact if they are performed instead of buying new clothing for one time (or a few times) use. Therefore, motivating people to choose these behaviours over buying new clothing for one-time use may still have an impact, but this needs further research.

Selling or donating clothing
Selling and donating for reuse both have a low PEG of 1,5 and donating damaged clothing for recycling has a PEG of 1. The low PEG for donating for recycling is presumably based on the current low amount of recycling. It is not clear what the low PEG for donating for reuse is based on. A possibility is that there is already a surplus of donated items, or that not all donated items are reused.

Selling and donating for reuse both have a high CP, so there is still room for improvement. However, the most mentioned issue 'donating needs to be easier' will probably be covered by the new textile law, which makes textile producers responsible for enabling consumers to donate their textiles. This will cause an increase in the number of locations where clothing can be donated, which makes it easier for consumers.

Textile producers will also be responsible for providing information about recycling, which might reduce the number of people who do not know they can donate their damaged items for recycling and give people transparency about what happens to their donated items, something which was also lacking according to the respondents.

With this new legislation, most of the mentioned issues are covered. The question remains how effective this will be, but this can only be researched after it has been fully implemented. Therefore, these behaviours will be excluded from the design phase of this project.

11.2 OVERVIEW OF THE INTERVENTION OBJECTIVES

The table below contains a summary of the Intervention Objectives (IO') and an overview of the Behaviour Change Strategies which can be used to tackle them. This list of IOs will be used as the starting point for the concept generation. The BCSs corresponding to the numbers shown in the table can be found in section 4.4.

For each objective, the COM-B section it addresses is given as well. Note that it may not be necessary to address each of the objectives to change behaviour. As was explained in section 4.2, the COM-B sections also influence each other. An increase in opportunity may influence motivation, and an increase in behaviour may increase opportunity, etc. However, these effects are hard to predict. Therefore, it is hard to say which of these Intervention Objectives are the most important to design for. An assumption of the importance of each IO was made based on the number of survey participants who addressed the barrier(s) the objectives are based on, and whether the barrier(s) were

mentioned in other literature. IOs with a high importance will be focussed on more during the individual brainstorming session (see section 12.2).

Assumed Importance	COM-B factor	IO nr.	Intervention objective	BCS
			Buying less clothing	
High	Capability	1	Assist people with choosing better quality clothing	(See IO 12-18)
Low	Motivation/ Opportunity	2	Convince people to create their own (timeless) style, instead of following trends	2, 3, 5, 6, 7, 10, 18, 21 25, 24, 36
High	Capability	3	Inform people about the impact of the clothing industry	26, 27, 28
Low	Capability	4	Make people aware of the clothing they own	25, 26
Medium	Opportunity	5	Decrease the norm of overconsumption	33, 34, 36
Medium	Motivation	6	Decrease habitual consumption	2, 3, 5, 6, 10, 11, 12, 16, 21
High	Motivation	7	Guide 'hedonistic shoppers' towards second-hand or sustainable (recycled) clothing	(See IO 8-11 & 19-24)
			Buying more sustainable (recycled) materials	
High	Opportunity	8	Increase the availability of clothing made from sustainable (recycled) material	31
Low	Capability	9	Spread awareness about brands that produce sustainable clothing	26, 28, 29
Medium	Capability	10	Spread awareness about the positive impact of sustainable fabrics	26, 28, 29
Medium	Capability	11	Provide transparency and information about sustainable fabrics	26, 28, 29
			Buying better quality clothing	
High	Capability	12	Teach people how to recognize good quality clothing	23, 24, 26, 29
High	Capability, Opportunity	13	Give people a tool which helps them recognize good quality clothing	26, 28, 31
Medium	Capability	14	Make people aware of the tricks clothing brands use to reduce costs (and quality)	26, 27, 29
High	Opportunity	15	Make it the norm for brands to sell better-quality clothing	30, 31,
Medium	Capability	16	Provide information about the impact of this behaviour	26, 27, 29
High	Opportunity	17	Make quality clothing more affordable	32
High	Motivation	18	Motivate people who cannot afford quality clothing to choose second-hand or sustainable (recycled) fabrics instead.	(See IO 8-11 & 19-24)
			Buying more second-hand instead of new	
High	Motivation	19	Make second-hand stores more attractive (clean, good quality items)	19

Low	Capability	20	Show consumers that second-hand clothing is washed (might have a reverse effect, this needs to be researched)	26, 29
High	Opportunity	21	Make second-hand clothing more widely available	31
Medium	Capability	22	Help people find second-hand clothing	11, 18, 26, 29, 30
Medium	Motivation	23	Change the association with poverty to something positive	3, 6, 13, 16, 19
			Repairing damaged clothing	
High	Opportunity	24	Make (tailor) repair more affordable	32
High	Capability	25	Promote repair as an affordable alternative to buying new clothing	25, 26, 29
Medium	Opportunity/ Capability	26	Make tailor repair more available/accessible, or spread awareness about existing possibilities	31, 25, 26, 29
Medium	Opportunity	27	Provide equipment for self-repair	31
Medium	Capability	28	Teach sewing skills for self-repair	23
High	Opportunity/ Motivation	29	Make repair the new norm (through positive associations)	33, 36, 2, 5, 6, 7, 11, 12, 16, 19,
Medium	Opportunity/ Motivation	30	Make sure clothes are designed with repair in mind (right to repair law)	30, 31, 20

12 BRAINSTORMING

12.1 BRAINSTORMING SESSIONS

To generate ideas for interventions, two types of brainstorming sessions were held: Co-design brainstorming and individual brainstorming. Two Co-design brainstorming sessions were held during which ideas were generated together with participants who represent the target group, and one Co-design brainstorming session was held together with employees from the FMF. Both the brainstorming techniques 'brainwriting' and 'cued brainstorming' were used during these sessions. The full description of these sessions can be found in the Appendix 6. A summary will be given in this section.

12.1.1 Session set up

The co-design brainstorming sessions consisted of four rounds. During the first round, the participants were asked to write their experiences (both positive and negative) with the behaviours on sticky notes (a different colour for each participant) and to place them on a table under cards with a description and an image for each target behaviour (see Figure 17. This exercise was made to make the participants familiar with the behaviours and to let them think about their own experiences with them, especially about why they do- or do not perform them.

Figure 17; Co-design brainstorm session round 1

After this, participants were given smaller sticky notes and asked to "vote" for the experiences they had also encountered (see Figure 18). This round aimed to have participants read about each other's experiences and to identify which ones were most common.

Figure 18: Voting

During round 2 the technique 'Brainwriting' was used to generate ideas about how to increase the target behaviours. Each of the target behaviours was written on top of a sheet of paper, and each participant was given one of these sheets. They were asked to write or draw as many as they could think of for interventions for two minutes, after which the sheets were passed around. By passing the sheets around, they could gain inspiration from the previous participants to come up with new ideas. After seven rounds, all of the participants had written down ideas for each of the behaviours (The behaviour of 'buying sustainable materials' was added to the list of target behaviours after these sessions).

During the third round, a different brainstorming technique was used; Cued brainstorming. The participants were given an envelope with cards containing a word. These words were both based on the BCSs (E.g., 'Habit', 'Transparent', and 'Information'), and words which were generated with a random word generator (E.g., 'Flower', 'Jury', and 'Brain'). The words which were used can be found in Appendix 6.7. The participants were asked to take a random cue card from the envelope and think

of as many ideas as possible using that word as inspiration. When they could not think of more ideas, they could take a new card. This time, the brainstorming was done together as a group.

This technique was chosen because the cues would help them come up with new ideas, in case they ran out of ideas during the brainwriting exercise. The randomized cues also helped the inexperienced brainstormers think outside of the box. Since some of the cue words did not fit the subject at all, it helped them make new connections and come up with creative ideas. Brainstorming together as a group also sparked interesting discussions about the subject, which led to even more new ideas.

During the last round, the participants were asked to go over all the generated ideas, select which ones they liked best, and create a list of these selected ideas. These lists can be found in Appendix 6.5. The concepts selected by the participants were later evaluated further by the researcher on whether they address any of the Intervention Objectives, and whether they use any Behaviour Change Strategies (more on this in sections 12.3 and 0).

12.2 INDIVIDUAL BRAINSTORMING

After three brainstorming sessions together with the target group and employees from the FMF, more ideas were generated by the researcher herself. This time, the IOs and BCS were used as a starting point for the concept generation, instead of an evaluation criterium. To create a better visual overview of the Intervention Objectives, a map was created in which they were sorted into various themes, such as 'International or national policies' and 'giving information' (see Figure 19). A larger version of this map can be found in Appendix 5.
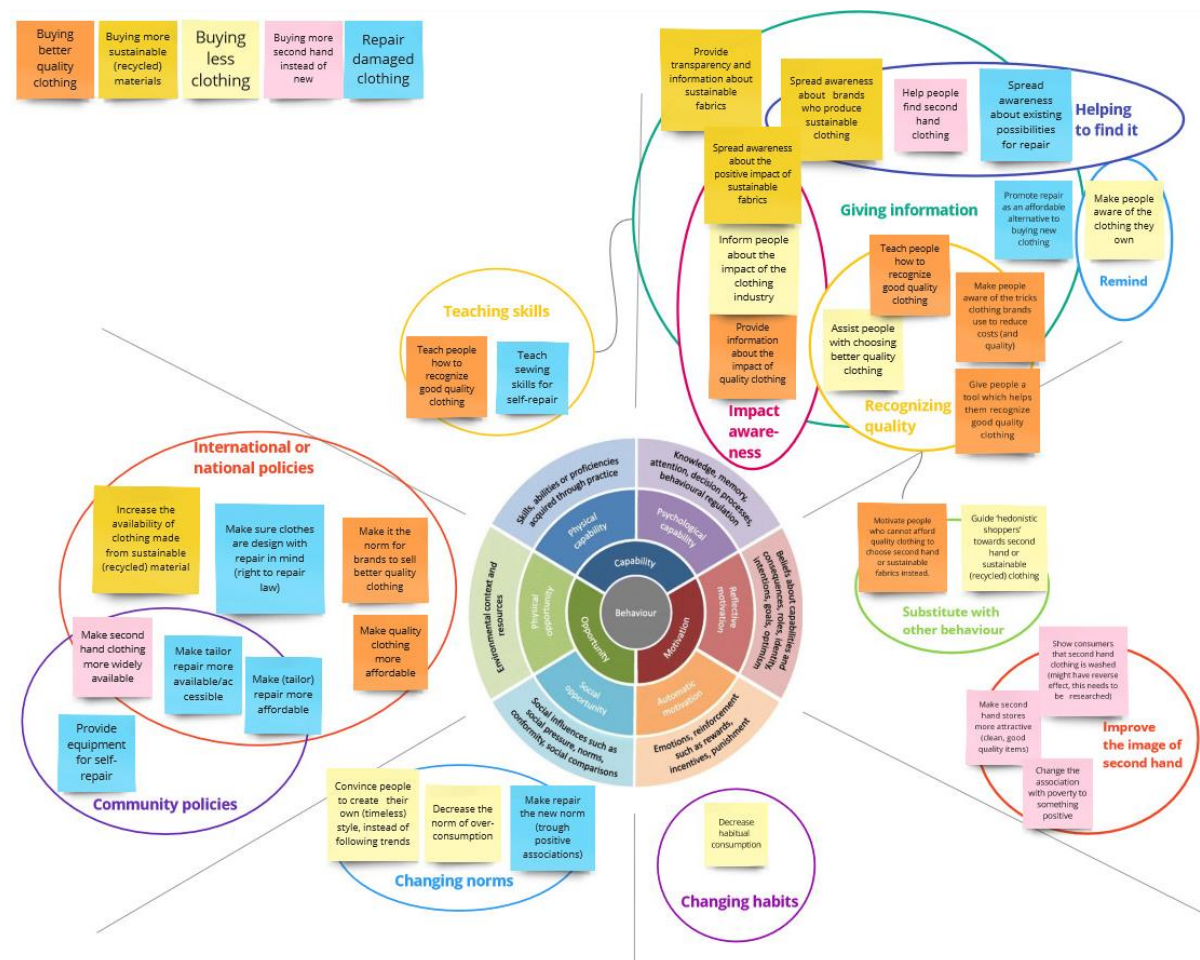

Figure 19: Categorized Intervention Objectives

After this, a brainstorming session was performed to generate concepts which address various IOs and use multiple BCSs to increase the chance of them having a large impact. The ideas generated during this session can be found in Appendix 7, and the selected ideas can be found in section 12.5, together with selected concepts from the co-design brainstorming sessions.
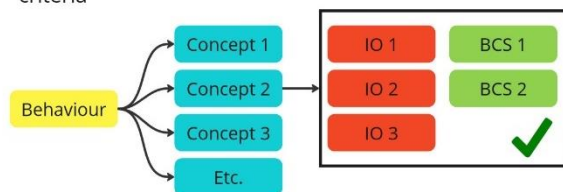
12.3 BRAINSTORMING TYPES

During the brainstorming sessions, it was discovered that there are two types of brainstorming. The participants of the co-design brainstorming sessions were not informed about the IOs and BCSs, which resulted in a free form of brainstorming where many ideas were generated to increase the behaviours. These ideas were later evaluated by the researcher on whether they address any IOs and use BCSs. During the individual brainstorming session, however, more emphasis was laid on addressing the (important) IOs and using multiple BCSs for each concept during brainstorming. The IOs and BCSs were now used as a starting point instead of evaluation criteria.

These two types of brainstorming were both found to be useful. The first type, where the BCSs and IOs were used to evaluate concepts, created an unrestricted form of brainstorming where many creative ideas were generated. This also resulted in concepts where, unknowingly, many IOs and BCSs were combined. This type of brainstorming is useful for brainstorming sessions with individuals who are not closely involved in the project, such as members of the target group, without first having to educate them on Behaviour Change Strategies and the list of Intervention Objectives. The generated ideas will be evaluated on these factors afterwards by the researchers or designers involved in the project.

The second type of brainstorming can be used to ensure that the important Intervention Objectives are covered during the sessions and that the concepts make use of the BCSs, which increases their likeliness to be effective. This more restricted form of brainstorming is more suitable for individuals who are involved in the project and have more knowledge about the IOs and BCSs. Using the IOs and BCSs as starting points for the concept generation also helps with coming up with new concepts, which would not have been thought of otherwise. Combining the two types of brainstorming is a good way of generating many concepts with various types of participants.
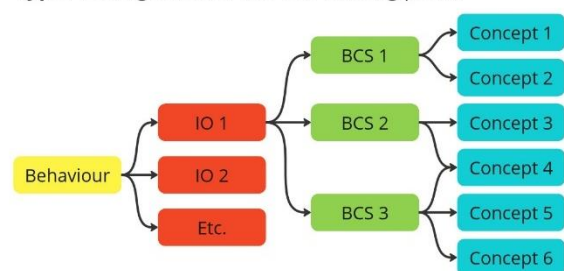

Figure 20; schematic overview of the two brainstorming types

12.4 IMPACT FEASIBILITY MATRIX

To choose the best concepts out of the ideas generated during the brainstorming sessions, a feasibility-impact matrix was used. This matrix was inspired by the impact-effort matrix (Gray, 2010) (see Figure 21). The impact-effort matrix is used to sort ideas based on how much effort it takes to execute them, and how much impact they will have.

Since some of the generated ideas are outside the abilities of the FMF, the ideas were not judged based on the amount of effort they would require, as in the impact-effort matrix, but on the ability of the FMF to execute them (the feasibility). Additionally, the ideas were judged based on expected environmental impact, which was based on whether the ideas address barriers found during the target group research, and whether they use established behaviour change strategies. This created a matrix with four quadrants: The 'Yes' quadrant for ideas which are expected to have a high impact, and are within the abilities of the FMF, a 'Maybe' quadrant for ideas which are also feasible, but may have less impact, a 'How?' quadrant for ideas which are expected to have a high impact but are not (yet) doable for the FMF, and a 'No' quadrant for ideas which are both hard to execute and not expected to have a high impact.

Concepts which are placed in the 'Yes!' quadrant are naturally the most interesting for the FMF, since these are feasible and are expected to have a high impact. Concepts placed in de 'How?' quadrant need more research or collaboration with external parties to achieve them, but these are also interesting to look into because of their expected high impact. Concepts in the 'Maybe' quadrant can be looked into in case there are very easy to implement, but these are not expected to have a high impact. Concepts placed in the 'No' quadrant can be excluded, since they are hard to execute and are not expected to have a high impact.

A feasibility-impact matrix was made for each target behaviour, and each of the concepts which were selected during the co-design brainstorm sessions and individual brainstorm was placed in the appropriate matrix by the researcher. The Y-coordinate (feasibility) of each concept is based on input from the FMF since they know best what is possible for them (or what they can influence), and the X-coordinate (expected impact) is based on whether they address intervention objectives, and whether they use the Behaviour Change Strategies. Each of the matrixes can be found in Appendix 6.8. One of these matrixes is shown in Figure 22.
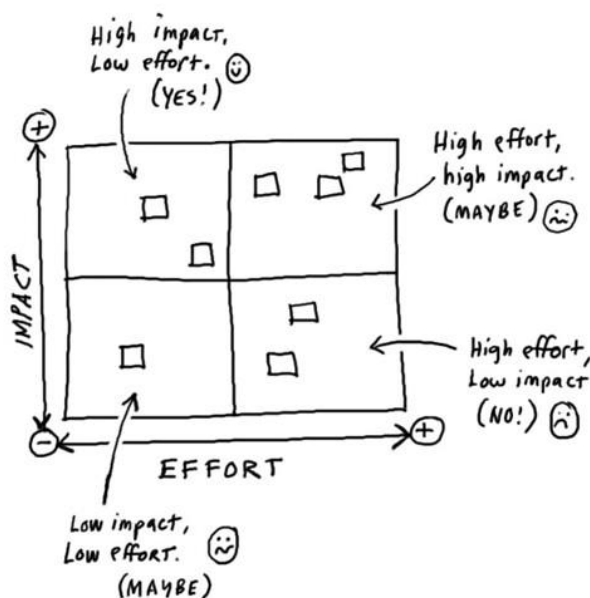

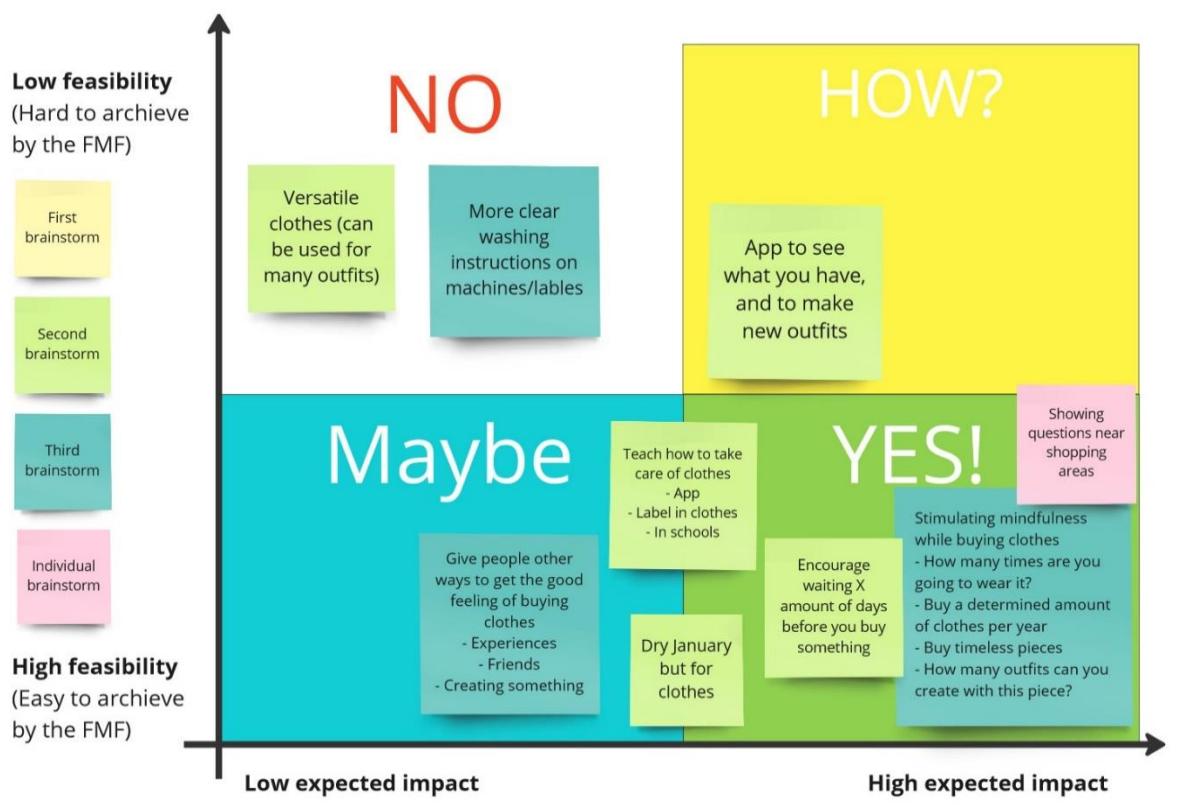*Figure 21: Impact-effort matrix (Gray, 2010)*

Figure 22: Feasibility-impact matrix for 'Buying less clothing'

12.5 CONCEPTS

This section explains the concepts which were selected from the brainstorming sessions. These are concepts which are expected to have a high impact, and which the FMF can achieve (the 'Yes!' section in the feasibility-impact matrix), or which they could influence (the 'How?' section). For each concept, the Intervention Objectives which are addressed will be given, as well as the Behaviour Change Strategies which are used.

Concept 1: Requiring regular retailers to sell second-hand and recycled clothing.

Some of the barriers mentioned in the literature and survey are not solvable by behaviour change interventions but need national or international policies to address. A lack of clothing made from sustainable materials, second-hand clothing, (affordable) tailor repair, and (affordable) good quality clothing is all mentioned as barriers by the survey respondents. This lack of availability can be addressed by policies which require retailers to make these resources more available. For example, clothing retailers could be forced to make a certain percentage of their products out of 100% recycled materials. As mentioned in the literature review, the technology to create recycled materials exists, only a market is still needed (Buiter, 2020)

Instead of attracting more customers to second-hand stores, second-hand items can also be brought to the customers. An idea which was mentioned in multiple co-design brainstorm sessions was to make it the norm (or even a requirement) for conventional clothing retailers to add a second-hand section to their stores. This way, consumers who would normally not go to second-hand stores can make this sustainable choice as well. It increases the availability, makes this behaviour easier to perform, and seeing other customers choose second-hand items may increase the social opportunity.

There are many advantages for retailers as well, such as an increased revenue and brand loyalty (Wiebke, 2020)

With the new textile law, stores are now already required to take in used textile items. This can be combined with a new requirement for stores to sell reusable items themselves. This can also be an opportunity for the stores themselves since they can make a profit from the collected items.
The sustainability- and self-benefits can be highlighted inside these stores as well (E.g. by placing posters), which promotes second-hand clothing more (and might attract more customers to actual second-hand stores.

A risk for this idea is that conventional stores may become powerful competitors for existing second-hand stores, which may cause these stores to stop existing. This needs to be researched before implementing this idea.

Nr.	Addressed Intervention Objectives
8	Increase the availability of clothing made from sustainable (recycled) material
21	Make second-hand clothing more widely available
22	Help people find second-hand clothing

Nr.	Used Behaviour change strategies	COM-B Section
11	Make the desired habit the default/ easiest to perform	Automatic motivation
30	Make the desired habit the default/ easiest to perform	Physical opportunity
31	Provide (more) resources	Physical opportunity

Concept 2: Subsidizing sustainable resources

To make tailor repair more affordable, the government could subsidize it, like they are doing in France (see Appendix 3). They could also make quality clothing more affordable by subsidizing it, or they could make fast fashion less affordable (less attractive) by penalizing it, like they are planning to do in France (See Appendix 3).

Nr.	Addressed Intervention Objectives
17	Make quality clothing more affordable
24	Make (tailor) repair more affordable

Nr.	Used Behaviour change strategies	COM-B Section
32	Make it affordable	Physical opportunity

Concept 3: Stimulating mindfulness while buying clothing

To decrease habitual consumption, prompts can be used to stimulate mindfulness while purchasing clothing. Examples of such prompts are as follows: 'How often are you going to wear this item?' 'Do you really need this?' 'Do you really like it?'

Consumers can also be encouraged to ask themselves questions before purchasing an item. 'Will I still like this in a couple of years?' 'Am I going to wear this more than X times?' 'Do I have something similar in the closet already?'

Role models could be used to make this intervention extra effective, for example, by showing that role models (similar to or admired by the target group) ask themselves these questions before deciding to purchase an item.

These prompts can also act as reminders for the desired behaviour; To be mindful about purchase decisions and to buy only necessary items.

Nr.	Addressed Intervention Objectives
2	Convince people to create their own (timeless) style, instead of following trends
4	Make people aware of the clothing they own
6	Decrease habitual consumption

Nr.	Used Behaviour change strategies	COM-B Section
3	Use role models	Reflective motivation
21	Prompting people's intentions	Automatic motivation
25	Remind people of the desired behaviour	Psychological capability
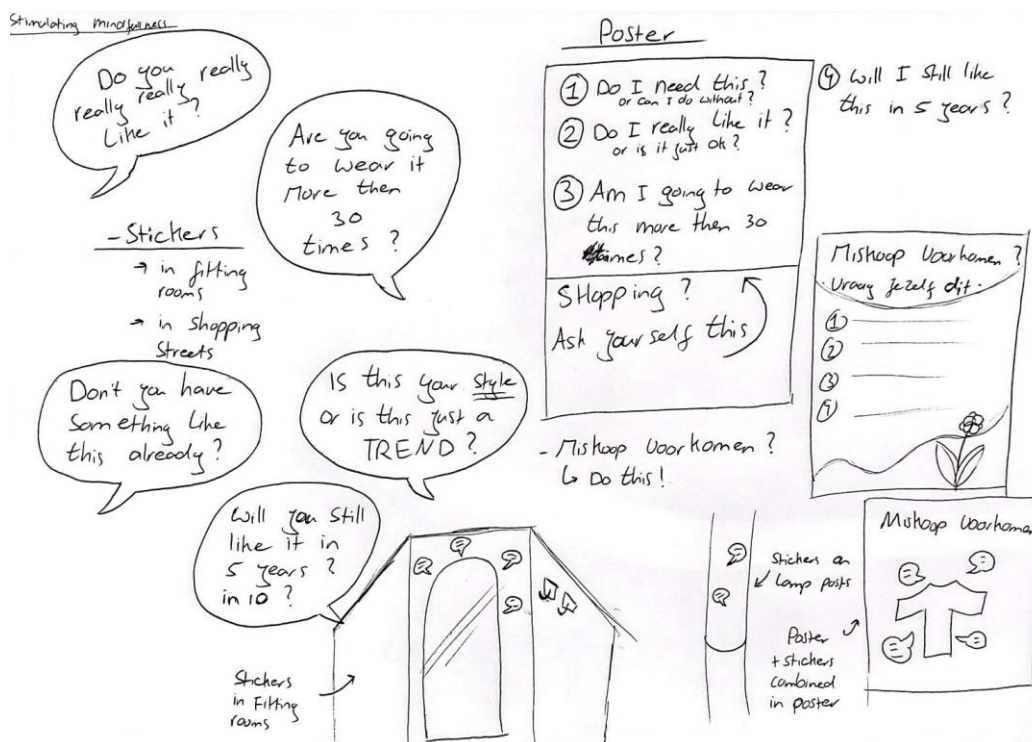
Figure 23: Sketches made during individual brainstorming

Concept 4: Awareness campaign about quality clothing

One of the main barriers people experience when trying to buy quality clothing is a lack of knowledge. People often do not know what to look for when judging clothing on its quality. Therefore, teaching people how to recognize quality clothing by providing clear, easy-to-understand information could help people make more durable choices.

People could be provided with easy-to-understand and easy-to-remember pointers which they can go over when judging clothing on its quality, like 'The fabric is not see-through', 'The zippers are made from metal', and 'The stitches are neat and close together'. Visual aids can help them understand these pointers. Providing posters or flyers near shops acts as a reminder of the pointers for shoppers

who want to check for quality and can prompt people who were not planning to check for quality to do so at the same time.

Nr.	Addressed Intervention Objectives
12	Teach people how to recognize good quality clothing
13	Give people a tool which helps them recognize good quality clothing

Nr.	Used Behaviour change strategies	COM-B Section
24	Make the behaviour easy to understand	Psychological capability
25	Remind people of the desired behaviour	Psychological capability
26	Provide information	Psychological capability
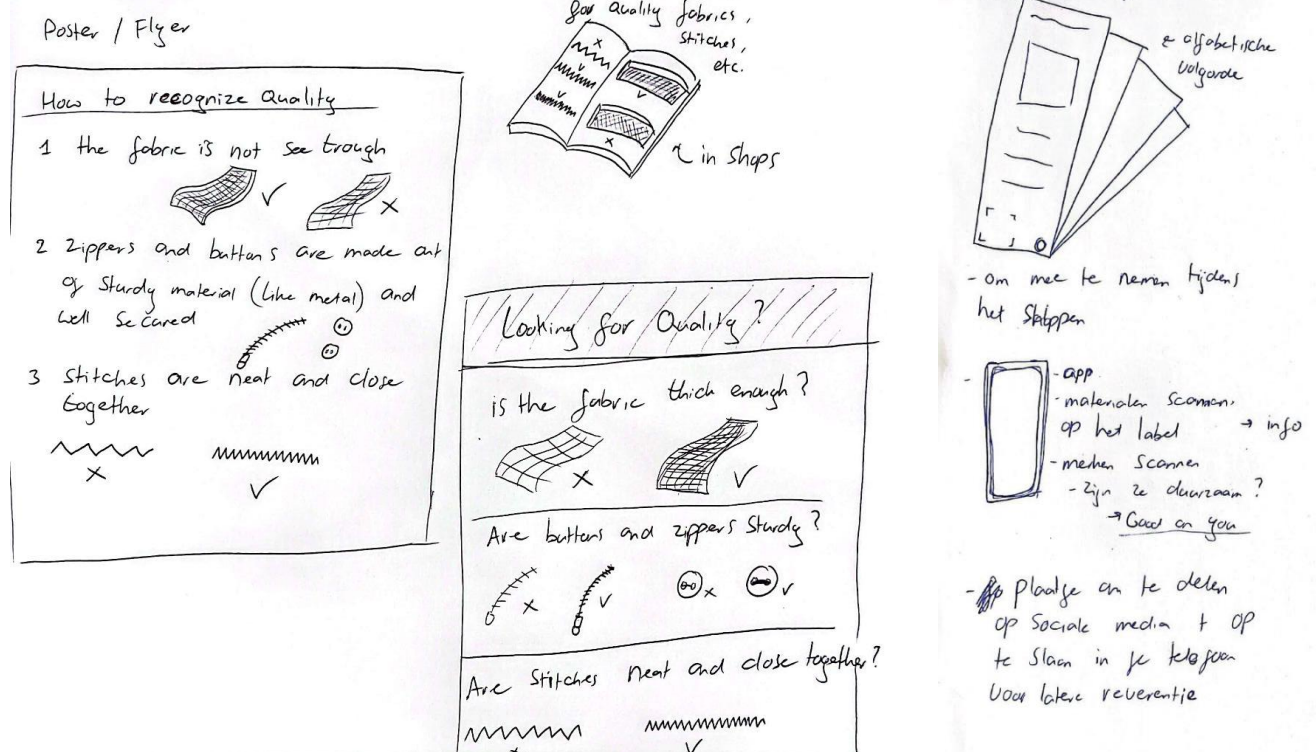
Figure 24: Sketches made during individual brainstorming

Concept 5: Quality standards and labels for clothing

International laws could also be used to improve the average quality of clothing, by, for example, setting certain quality standards for clothing sold in Europe. Making clothing with repair in mind could become an additional requirement. A national or international quality label for clothing could be introduced as well.

To establish this, specific requirements for quality need to be established which items need to meet before being allowed to wear the label. For instance, the fabric itself needs to be able to withstand a certain amount of wear, and the stitches need to be within a certain distance of each other. These requirements need to be specific and measurable.

A clothing quality label, perhaps in addition to a sustainability label, helps consumers choose more durable items, without them having to learn how to recognize quality. Not being able to trust the quality of clothing is mentioned as a barrier to buying more expensive items (price does not equal quality), so a quality label might give consumers the guarantee they need to invest more in durable items.

Nr.	Addressed Intervention Objectives
1	Assist people with choosing better quality clothing
13	Give people a tool which helps them recognize good quality clothing
15	Make it the norm for brands to sell better-quality clothing
30	Make sure clothes are designed with repair in mind (right to repair law)

Nr.	Used Behaviour change strategies	COM-B Section
11	Make the desired habit the default/ easiest to perform	Automatic motivation
24	Make the behaviour easy to understand	Psychological capability
26	Provide information	Psychological capability
28	Use labelling to provide information	Psychological capability
30	Make the desired habit the default/ easiest to perform	Physical opportunity
31	Provide (more) resources	
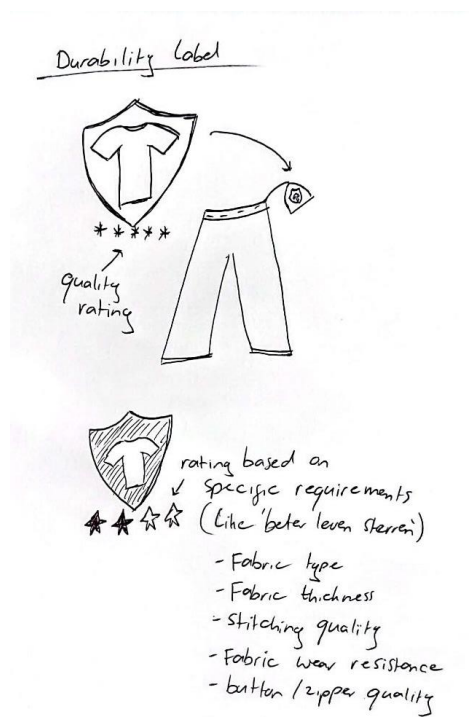
Figure 25; Sketches made during individual brainstorming

Concept 6: Highlighting self-benefits for buying second-hand clothing

One of the barriers to buying second-hand clothes is the negative association with poverty, especially for people who live- or have lived in poverty themselves. By creating a more positive association with second-hand clothing, and especially with the low price of second-hand clothing, this association decreases.

To create a more positive association with second-hand clothing, a campaign can be made to highlight the self-benefits of choosing second-hand over new items. One of these self-benefits is

saving money. Dutch consumers are known to like saving money, so highlighting how much can be saved could create a positive feeling. For example, posters can be made that show the price of a new item and the price of the same item second-hand as if it is a sale (see Figure 26). Another self-benefit that can be highlighted is the experience of 'treasure hunting' when searching for second-hand items, which is enjoyed by some consumers. Role models (especially those admired by the target group) can also be used to create more positive associations.

Nr.	Addressed Intervention Objectives	
23	Change the association with poverty to something positive	

Nr.	Used Behaviour change strategies	COM-B Section
3	Use role models	Reflective motivation
6	Highlight self-benefits	Reflective motivation
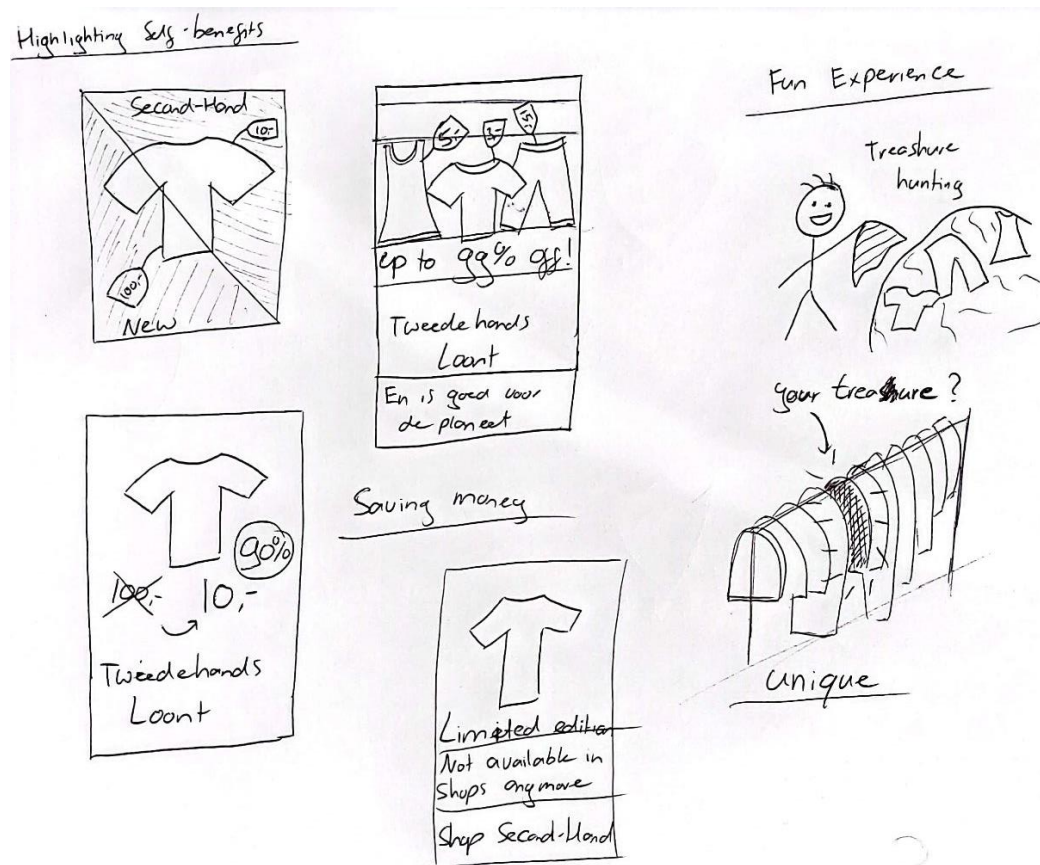
Figure 26: Sketches made during individual brainstorming

Concept 7: Showing where to find resources (second-hand shops, sustainable brands, tailor shops)

For the behaviours 'Buying second-hand clothing', 'Buying sustainable fabrics,' and repairing clothing, a lack of availability was one of the main barriers mentioned in the survey. However, as can be seen in Figure 11, second-hand stores and tailor shops are available in Friesland, as are stores that sell clothing made from sustainable or recycled material. Next to making these sustainable options more widely available, the perceived availability could be improved by showing consumers where to find them. This can be done by, for example, placing directional signs in shopping streets which point

in the direction of sustainable stores / tailor shops, or by placing trails on the ground which lead consumers to these locations. This can be combined with providing information about the behaviours, the negative impact of the clothing industry, the positive impact of the sustainable behaviours, as well as prompting peoples' intentions.

Nr.	Addressed Intervention Objectives
9	Spread awareness about brands who produce sustainable clothing
10	Spread awareness about the positive impact of sustainable fabrics
11	Provide transparency and information about sustainable fabrics
22	Help people find second-hand clothing
26	Make tailor repair more available/accessible, or spread awareness about existing possibilities

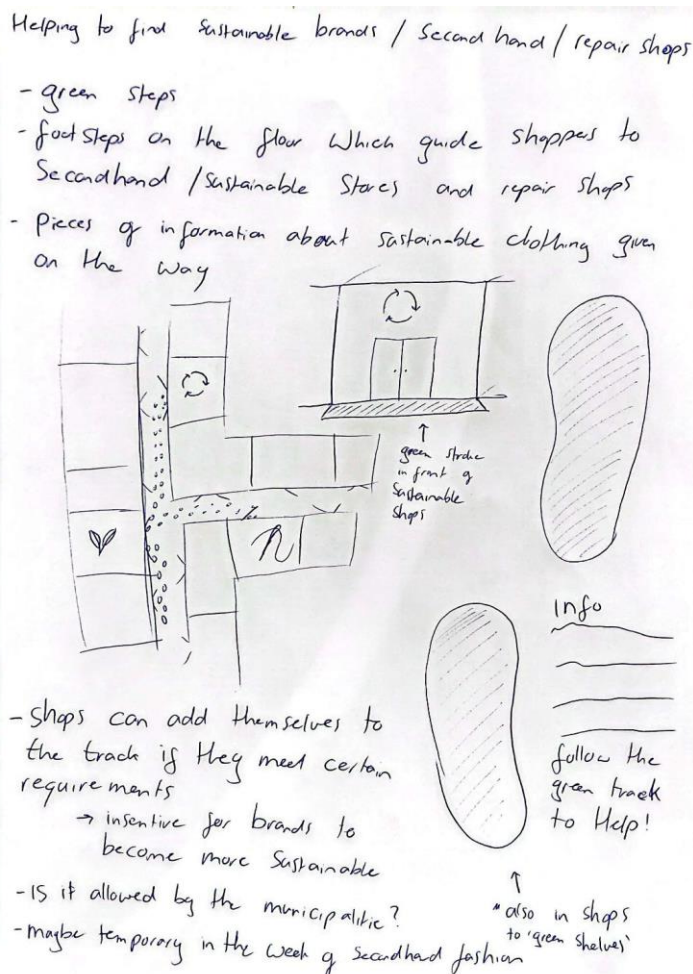| Nr.	Used Behaviour change strategies	COM-B Section
7	Highlight impact	Reflective motivation
18	Use priming/cues to trigger subconscious behaviour	Automatic motivation
21	Prompting people's intentions	Automatic motivation
25	Remind people of the desired behaviour	Psychological capability
26	Provide information	Psychological capability

Figure 27: Sketches made during individual brainstorming

Concept 8: Supporting second-hand stores with renovations

Another barrier to buying second-hand clothing is the perceived lack of quality and hygiene of both second-hand items and the stores that sell them. By making second-hand stores look and feel more attractive (more like regular stores), this association may decrease.

There is much knowledge available about how to make stores more attractive to customers, like decorated display windows, comfortable seating areas, good lighting, music, and attractive scents. Second-hand stores could be supported with funding for renovations and information about how to make their store more attractive to a wider audience.

After these renovations, people need to be made aware of the improvement. A campaign or event can be created to attract new customers to the stores.

Nr.	Addressed Intervention Objectives
19	Make second-hand stores more attractive (clean, good quality items)

Nr.	Used Behaviour change strategies	COM-B Section
19	Change the presentation	Automatic motivation

Concept 9: Ethical consumptions + sewing lessons at school

Teaching children about the impact of the clothing industry, and the impact they can make with ethical consumption, may increase both their psychological capability, social opportunity, and motivation for many (or all) of the behaviours. This idea is to create a course that schools can use to teach their students about ethical clothing consumption. These lessons can be combined with sewing lessons, during which they learn how to make small repairs, or how to adjust (pimp) their clothing to their own (changing) tastes. Role models of children could be invited to participate (E.g. in instruction videos)

Teaching this information and this skill to children may have a positive impact on the behaviour of the next generations and may also cause their parents to learn something and change their behaviour. It would be best to give this education to children who make their own choices about which clothing they wear (Presumably during the final years of preschool or first years of high school).

Nr.	Addressed Intervention Objectives
3	Inform people about the impact of the clothing industry
9	Spread awareness about brands that produce sustainable clothing
10	Spread awareness about the positive impact of sustainable fabrics
12	Teach people how to recognize good quality clothing
14	Make people aware of the tricks clothing brands use to reduce costs (and quality)
16	Provide information about the impact of buying quality clothing
23	Change the association with poverty to something positive
28	Teach sewing skills for self-repair
29	Make repair the new norm (through positive associations)

Nr.	Used Behaviour change strategies	COM-B Section
3	Use role models	Reflective motivation
7	Highlight impact	Reflective motivation
23	Teach skills	Physical capability

| **24** | Make the behaviour easy to understand | Psychological capability |
| **26** | Provide information | Psychological capability |

Concept 10: Platform on which consumers can rate brands on their durability

The barrier of not being able to recognize quality clothing could be solved by allowing consumers to rate brands on their quality and durability on a platform or app. This is already done for some other goods (E.g., the app Untappd for beers). It creates a sense of community (social opportunity) and gives consumers a trusted source of information (other consumers). It may also be an incentive for brands to produce better quality items, to improve their rating.
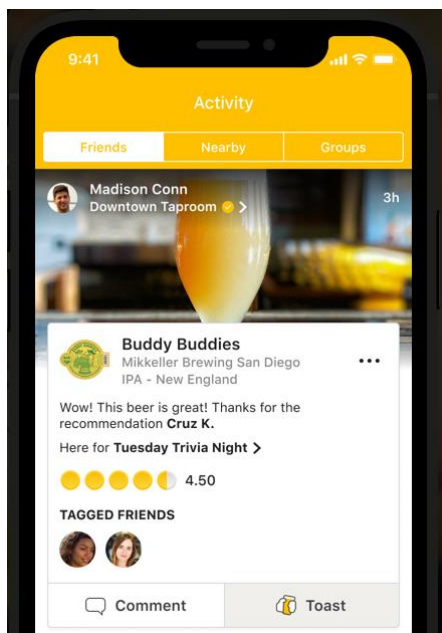
Figure 28: The beer rating app Untappd

Nr.	Addressed Intervention Objectives
13	Give people a tool that helps them recognize good quality clothing

Nr.	Used Behaviour change strategies	COM-B Section
26	Provide information	Psychological capability
29	Use role models to spread information	Psychological capability
33	Communicate sustainable behaviours of others	Social opportunity

13 CONCEPT EVALUATION AND SELECTION

This section will describe multiple types of evaluation which are used to select the best concepts. First of all, a target group evaluation will be done, after which the most liked ideas will be evaluated on feasibility, possible negative effects (see section 4.6), and ethical qualities (see section 4.7). This will be the last stage of the case project. After this, the FMF can develop, test, and implement the selected

concepts or decide to use the information gathered during this project (such as the Intervention Objectives), to generate new concepts.

13.1 TARGET GROUP EVALUATION

Four individuals were asked to give their opinions on the ten concepts during an open interview setting. The idea behind each concept was explained to them, after which they were asked what they thought about it and whether it would motivate them to perform the target behaviour(s) more often. Since no participants living in Friesland could be found, participants from other Dutch provinces from varying age groups, genders, and sustainability levels were asked as representatives of the target group.

Table 5 shows the demographic information of the participants of this evaluation.

Participant	Gender	Age	Stated sustainability (1-10) *
A	F	57	3
B	M	59	5
C	F	27	5
D	M	24	7

Table 5: Evaluation participants

*Answer to the question 'How often do you take sustainability into account for choices made during daily life? (On a scale from 1-10)'

This section will explain which concepts were selected through the target group evaluation. The full summary can be found in Appendix 8.

13.1.1 Selected concepts

The participants were asked to give their opinion on each of the concepts, whether they thought it would motivate them and other people to perform the target behaviour(s) more often, and whether they had any concerns regarding the concepts. The participants were most enthusiastic about the following four concepts.

Concept 1: Requiring regular retailers to sell second-hand and recycled clothing.
All the participants were very enthusiastic about this idea, especially about the second-hand section in regular stores. Participants A, B, and D named it the best concept out of all ten. Participant D mentioned that this would instantly solve the lack of availability, and Participant A mentioned that she would instantly go for the second-hand section in a regular store.

There were some concerns about the feasibility of this concept, like retailers protesting such measurements or creating loopholes around laws. It was also mentioned that shops should be able to determine which second-hand items they want to sell, and that they should not be held responsible for the quality of such items. It was also mentioned that more availability of sustainable fabrics will only be effective if these items are not much more expensive than regular items.

Concept 4: Awareness campaign about clothing quality
All the participants found it a good idea to make people more aware of how to recognize high- and low-quality clothing. Both participants A and B agreed that the information would stay in the back of

people's minds, and would influence them during purchase decisions, even when not actively thinking about it.

Participant A mentioned that spreading this information on social media and via influencers would work better than via posters or flyers. Participant D was mainly interested in the value of items (price/quality), so he wants to be able to see how long an item will last. Participant C mentioned that it would be good to make a campaign with a bit of information and to let people request more elaborate information themselves.

Concept 6: Highlighting self-benefits of buying second-hand

All the participants were enthusiastic about this idea, especially showing how much money you can save by buying second-hand. Another self-benefit that was mentioned by Participant A is being able to see what an item looks like after multiple washes, and therefore being able to see the quality better. Participant D mentioned that this would be the perfect time to roll out such a campaign since more people are struggling financially because of inflation, and that this would also influence individuals who are not very concerned with sustainability.

Concept 9: Ethical consumption + sewing lessons at schools
All the participants found this a good idea. Participant A mentioned that a school is the ideal location to spread such information and skills, but that it would be better to teach this at high schools instead of preschool. Participants C and D also suggested keeping sewing lessons simple with only needlework, and no sewing machines. Participant B suggested adding a fashion show at the end of the lessons, where children can showcase their creations. Participant C proposed to add information about clothing care (like washing instructions).

The rest of the concepts gained mixed or negative reactions. Concept 2 (Subsidizing sustainable resources) was thought to not have a long-term effect. Concept 3 (Stimulating mindfulness while buying clothing) was found to be patronizing and thought to be counterproductive. Positive reinforcement, like complementing sustainable behaviour, was mentioned as a better alternative. Concept 5 (Quality standards and labels for clothing) and concept 7 (Showing where to find resources) were thought to be ineffective and hard to implement. Therefore, it was decided to only continue with the four selected concepts, which will be evaluated further.

13.2 FEASIBILITY EVALUATION

In this section, the concepts will be evaluated on their expected feasibility, based on the abilities of the FMF. This has been done before in section 12.4 with the impact-feasibility matrix, but this section will go more into detail about why a concept will- or will not be feasible.

Concept 1: Requiring regular retailers to sell second-hand and recycled clothing.
This concept is assumed to be the most difficult to implement out of the four chosen concepts. For many retailers, laws and regulations are needed before they will add (more) sustainable (recycled) materials and second-hand items to their stores. It is expected that requirements like these will be met with resistance from many parties in the clothing market. It is therefore advisable to also focus on the benefits for retailers, like increased company sustainability, revenue, and brand loyalty (See section 8.4)

The FMF cannot set such regulations but can advise and influence governments by researching and showing the feasibility and positive influence it will have on consumer behaviour and the environment. According to the literature review, it is possible to create more fabric out of recycled

(and sustainable) materials since the technology exists. The new textile law requires retailers to take in used clothing donations, which may increase the amount of donations, and which makes selling used clothing inside these shops a logical next step. The export of used clothing outside of Europe suggests second-hand items are abundant in the Netherlands, which means there are enough resources for this concept to be feasible.

Based on the information found during this research, this concept is expected to be feasible. However, since the clothing industry is a complex system, more research needs to be done to verify this.

Concept 4: Awareness campaign about clothing quality
The campaign itself is expected to be feasible by the FMF. They have the resources and channels needed to spread the information in various ways (including posters, (digital) information folders, social media posts, etc.)

The difficult part of this concept is gaining the right information about clothing quality and sustainability. Due to time constraints, no elaborate research has been done on the effect of various quality aspects on clothing durability and sustainability. As mentioned by textile expert Barkel during an interview, it is hard to determine which aspects make an item of clothing sustainable. For example, a thicker fabric may make the item more durable, but more material is needed as well. Therefore, more research is needed to determine which quality aspects make an item not only more durable but also more sustainable.

Concept 6: Highlighting self-benefits of buying second-hand
This concept is assumed to be perfectly feasible for the FMF. Not much additional research is needed, except for which self-benefits will be most appreciated by (hedonistic) shoppers. The FMF has the needed resources to create such a campaign.

Concept 9: Ethical consumption + sewing lessons at schools
This concept is also expected to be possible for the FMF. Together with the right experts (see section 13.4), they are expected to be able to create an effective course for students, which can be given when collaborating with schools

13.3 NEGATIVE EFFECTS EVALUATION

In this section, the selected concepts will be evaluated on the risk of the negative effects mentioned in section 4.6, as well as other negative effects a concept might cause.

Concept 1: Requiring regular retailers to sell second-hand and recycled clothing.
The rebound effect is a significant risk for this concept. The increased availability of sustainable resources (Sustainable and second-hand clothing) may cause an increase in clothing purchases (Both because of the decreased environmental guilt and because of the lower prices of second-hand items), which may decrease the positive environmental impact or may even cause a negative impact. It is therefore important to implement it on a small scale at first, and to test the effect of the increased availability on consumer behaviour.

Moral licensing (allowing oneself to perform an unsustainable action after performing a sustainable behaviour) is a risk for every intervention which increases sustainable behaviour. This is difficult to prevent and hard to measure, since it may happen in an entirely different area. Specific methods to

prevent this effect were not found during the literature review. It may be wise to research the difference in moral licensing effect between increasing sustainable products with and without information about the positive environmental impact of buying such products. Not adding such information may decrease the moral licensing effect, because consumers may be less aware of the positive impact they are creating.

This concept is not expected to cause any of the other negative effects mentioned in section 4.6. An additional risk which should be considered is the effect this concept will have on existing second-hand clothing stores. The availability of second-hand garments in regular stores may create (unfair) competition for these existing second-hand shops which, in the worst case, may cause them to disappear (more on this in section 13.4).

Concept 4: Awareness campaign about clothing quality

For this concept, little rebound effect is expected. For this to happen, consumers should start to purchase more clothing after gaining more knowledge about how to recognize quality clothing, which is not expected. Moral licensing could happen in case choosing quality clothing is framed as an environmental behaviour, but this does not have to be the case. It can be framed as a self-benefit instead. No other negative effects are expected

Concept 6: Highlighting self-benefits of buying second-hand

Since this concept highlights the self-benefits of the behaviour instead of environmental impact, no rebound effect or moral licensing is expected. No other negative effects are expected as well.

Concept 9: Ethical consumption + sewing lessons at schools

Since this concept highlights the positive environmental impact of behaviours, moral licensing is a risk. This effect could be added to the material of the course to make students aware of it, which may decrease the effect.

The course material should be given in a positive and non-judgmental manner, in order to prevent self-defensive reactions. This should also be tested with the target group.

The information given during the course should be easy to understand and selected with care, in order to prevent information overload. Too much information may decrease the positive effect which is aimed for.

13.4 ETHICAL EVALUATION

As mentioned in section 4.7, the concepts will be evaluated on three ethical questions:
1. Does the intervention have a negative influence on the freedom of the user?
2. Does every party have a significant say in the design and implementation of the intervention?
3. How is the responsibility for results/effects caused by the intervention divided?

Concept 1: Requiring regular retailers to sell second-hand and recycled clothing.
1. This concept does not influence the freedom of the user. Consumers are still free to choose between new and second-hand clothing and sustainable- or conventional materials.
2. The three most important parties involved in this concept are the government, retailers, and consumers. The government needs to implement the laws needed for retailers to start creating more availability. However, retailers should also be given the freedom to implement these regulations in a way which is suitable to them. There needs to be a balance between

regulations and freedom for retailers so that more availability is created without significantly harming their business models. Consumers can be involved by researching how they prefer to see sustainable- and second-hand clothing implemented in clothing shops. A fourth party which needs to be considered is existing second-hand clothing shops. It needs to be researched whether customers of these stores would stop going there as soon as second-hand clothing is available in regular shops, or in other words, if the implementation of this concept threatens the existence of second-hand clothing stores. If it does, different implementations in which existing second-hand stores are involved can be considered, like a store-in-store concept where the second-hand section in regular stores is run by existing second-hand brands.

3. As mentioned before, this concept can result in (unfair) competition between regular and second-hand stores. The responsibility for this would be with the government since they have the final say in how these regulations and their effects are researched and implemented.

Concept 4: Awareness campaign about clothing quality
1. This concept does not influence the freedom of the user. Consumers are still free to choose which kind of garments they want to purchase.
2. Consumers are an important party in this concept, they need to have a say in the way they receive the information to increase the effectiveness (E.g., by letting people request information themselves). Textile experts should be involved in creating the information to make sure it is accurate and to keep it up-to-date, and sustainability experts should be involved to make sure that the advice which is given actually causes a lower footprint when followed.
3. No negative consequences are expected from this concept.

Concept 6: Highlighting self-benefits of buying second-hand
1. This concept does not influence the freedom of the user.
2. Parties who should be involved in the development of this concept are consumers (to research which self-benefits (hedonistic) shoppers are interested in), Second-hand clothing retailers (mainly to keep them informed), and the ones involved in distributing this campaign (E.g., municipalities, social media channels, role models, etc.)
3. No negative consequences are expected from this concept

Concept 9 (Ethical consumption + sewing lessons at schools)
1. This concept has no negative influence on the freedom of the user, other than that students may be required to follow the course by the school, just like other school subjects.
2. Parties which need to be involved in the creation of an effective course are teachers, sustainability experts, students themselves, and course-givers. Teachers (or other educational experts) can help make the course effective for students, sustainability experts can make sure the right information is given, and students can be involved to make the course engaging and interesting for them. Course-givers can be either teachers or external speakers, as well as people who can teach sewing skills.
3. No negative consequences are expected from this concept.

13.5 CONCEPT SELECTION

In section 13.1 a selection between the concepts was already made based on the target group evaluation. Each of these concepts was evaluated on their feasibility, ethicality, and risk of negative

effects. It became clear that concept 1 (Second-hand and recycled clothes sold by regular retailers) may be difficult to realize, has a risk for a rebound effect and moral licensing, and may have a negative effect on existing second-hand shops. However, this all needs to be researched further.

Concept 4 (a quality awareness campaign) needs more research towards the environmental effect of quality clothing, and care should be taken to prevent moral licensing. Concept 6 (highlighting self-benefits of second-hand) is feasible, and no negative effects or ethical questions were found. Concept 9 (school lessons) is also feasible and ethical, but care should be taken to prevent moral licensing, self-defensive reactions, and information overload.

As mentioned in section 4.5, it would be best to implement multiple strategies and interventions to have a better chance of success, which is why it is not necessary to choose one single concept to implement. However, in case a single concept needs to be chosen to work on first, concept 6 would be the most logical choice since it was found to be feasible and has the least (ethical) risks. This concept aims to increase the motivation to buy second-hand and recycled clothes by connecting this behaviour to positive associations. However, the opportunity to do this also needs to be increased to increase the performance of these target behaviours. Therefore, a combination of a campaign which highlights the self-benefits of buying second-hand, and an increase in availability by introducing a second-hand section in regular stores, may be a very effective way to increase the performance of this target behaviour. However, the effectiveness still needs to be tested.

With some more research, concept 4 (a quality awareness campaign) could be an effective way to give people the knowledge (psychosocial capability) they need to make sustainable choices, and, with care taken, concept 9 (school lessons) could be a great way to motivate future generations.

These concepts do not cover each missing COM-B factor of each of the target behaviours. To do this, more concepts need to be generated, evaluated, and tested, but each intervention which effectively increases the motivation, capability or opportunity for a target behaviour can bring us closer to achieving more sustainable clothing consumption.

13.6 CONCEPT VISUALISATION

As was mentioned in the previous section, a combination of a campaign which highlights the self-benefits of second-hand clothing (concept 6) and the creation of more availability by selling second-hand clothing in regular stores (concept 1) is expected to have a large positive impact on the performance of this sustainable behaviour. The create a better idea of what this may look like, this section contains some visualisations of both concepts.

Concept 1
Figure 29 shows how second-hand sections can be integrated into regular clothing stores by making it a separate section in the store, or by reserving some racks for it. Using positive words such as 'PeLoved' and 'Vintage' may cause more positive reactions from consumers.

Figure 29: Second-Hand sections in regular stores

Concept 6
To give a better idea of concept 6 (highlight self-benefits), some example posters were made which could be part of a campaign to highlight the self-benefits of buying second-hand clothing. These concept posters compare buying second-hand clothing to buying clothing on sale to save money, since the self-benefit of 'saving money' was the most liked by the target group representatives.

Figure 30: Self-benefit campaign posters (saving money)

Combining concepts 1 and 6

Figure 31 shows how concepts 1 and 6 can be combined in the same setting by placing a poster which highlights self-benefits of buying second-hand clothing near a second-hand section in a regular clothing store. Another self-benefit which was mentioned by one of the target group representatives was 'being able to see the quality of clothing after a few washes'. This self-benefit was included in the poster as well.

Combining these two concepts increases the opportunity by increasing the availability and accessibility of second-hand clothing and sustainable fabrics, and aims to increase the reflective motivation by highlighting self-benefits of performing the sustainable behaviour 'buying second-hand items instead of new'.

Figure 31: Combined concepts 1 and 6

14 METHOD EVALUATION

After executing the case study by using the IBIS method, much information was gained about the effectiveness of the method through first-hand experience. In order to make the IBIS method an effective behaviour intervention design method which can be used during future sustainability projects, it is important to take a close look at the method once again and evaluate and improve it based on the gained experience.

Figure 32 shows the overview of the first version of the method, which was used during this project. During the execution, it became clear that some improvements are needed to optimize the method. In the next section, these points of improvement will be discussed, after which an improved version of the IBIS design method will be created.
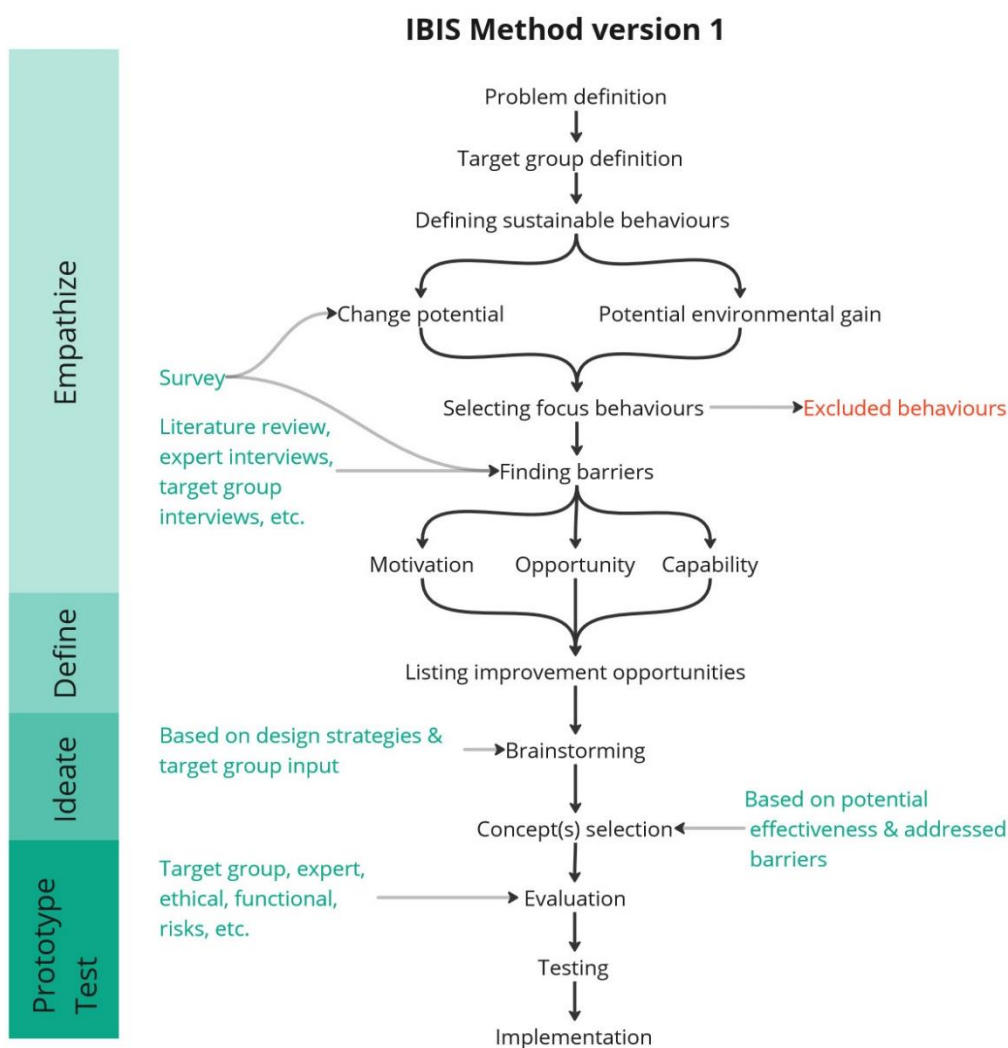
IBIS Method version 1

Figure 32: Method version 1

14.1 IMPROVEMENT POINTS

Including 'defining behaviours'
During this project, the behaviours were already defined before the method was created, and this was not included in the overview of the method. However, this step should also be included.

PEG first
During this project, the PEG and CP were both measured before a choice was made between the behaviours based on both factors. However, this meant that behaviours with a low PEG were included in the survey, after which they were excluded based on their low PEG. Therefore, it would be better to first select behaviours based on their PEG, after which only the selected behaviours (with a medium and high PEG) are added to the survey. This makes the survey more concentrated on impactful behaviours and allows for more elaborate questioning per behaviour, without making the survey too long.

More specific questions about barriers
The barriers to the behaviours were found by asking one open question for each behaviour; "What would motivate you to perform this behaviour (more often)?", after which the mentioned barriers were categorized under the COM-B sections. This resulted in much useful information. However, it was not clear whether participants had mentioned every barrier they faced for every behaviour, or whether they only mentioned the first thing which came to their mind before moving on to the next question. Many participants likely chose the second option, which means that other barriers they faced remained unmentioned.

This can be solved by asking more closed questions based on the COM-B model sections, to ensure every possible barrier is covered. So instead of asking one open question about all the barriers, one question can be asked about the physical opportunity, one about the reflective motivation, etc. This way, one can make sure that every section of the COM-B model is covered. To make the questionnaire even more elaborate, more specific questions about every COM-B section can be asked. For instance, for the section 'reflective motivation', one can ask questions about their perceived self-efficacy, their environmental self-identity, their intentions, their goals, and their optimism. This elaborate way of studying barriers is more suited for questionnaires where only one or a few behaviours are included, to prevent the questionnaire from getting too long.

Creating more specific questions based on the COM-B model ensures that every possible type of barrier is covered and ensures a more reliable result. The following table contains example research questions for an in-depth target group research.

COM-B section	Example research questions
Physical capability	Do they* have the needed skills to perform the target behaviour?
Psychological capability	Do they have the right knowledge about the impact of the target behaviour?
	Do they have the required knowledge about how to perform the target behaviour?
	Are they reminded about the target behaviour often enough, and in the right manner?
	Are they able to regulate their behaviour to perform the target behaviour?
Physical opportunity	Are the resources required to perform the target behaviour available and accessible?
	Is performing the target behaviour affordable?

	Do they have enough time to perform the behaviour?
Social opportunity	Which social norms affect the performance of the target behaviour?
	Is there enough support for performing the target behaviour in their social circles?
Reflective motivation	Do they have the intention to perform the target behaviour?
	Do they have enough confidence in their ability to perform the behaviour (self-efficacy)?
	Does performing the target behaviour fit with their self-identity?
	Are they optimistic about the influence of the target behaviour?
	Are they optimistic about the willingness of others to perform the target behaviour?

Table 6; Target group research questions based on the COM-B model

*The target group

Additions to the behaviour change wheel
During the target group research, it became clear that, in addition to the actual availability of resources, people's awareness about the availability is an important factor as well. This perceived physical opportunity, as well as the perceived social opportunity, can be sorted under the psychological capability in the COM-B model, since it refers to knowledge.

Two ways of brainstorming
Brainstorming sessions would be based on the found barriers and behaviour change strategies. However, during the performed brainstorming sessions it became clear that there are two ways of using these barriers and strategies, both of which have their own advantages and disadvantages.

The first way of brainstorming is to take one- or multiple comparable barrier(s), and to brainstorm on solutions using the various strategies as starting points. This is a more constrained form of brainstorming but combining barriers with various BCSs can still result in creative solutions. Having to think of ways to use various BCS to solve a single problem can help with out-of-the-box thinking and might be a better strategy for inexperienced brainstormers.

The second way of brainstorming is to temporarily let go of the found barriers and strategies, and to brainstorm freely on ideas to improve one or multiple of the selected behaviours. This is an unrestricted form of brainstorming, where the only goal is a high quantity of (creative) ideas. After this session, the ideas should be evaluated to see whether they address one or multiple barriers and whether they use BCSs. Ideas can be selected based on the number of barriers they aim to reduce, and their expected effectiveness based on the BCSs they use. This freer form of brainstorming can result in ideas which address a larger number of barriers and use a larger amount of BCSs since the creative process is not restricted to pre-selected barriers and BCSs. This method is expected to be more suitable for experienced brainstormers, but also for participants who are not familiar with BCSs or the found barriers, like members of the target group. This allows them to participate in brainstorm

sessions without first learning about behaviour change theories and barriers. The ideas generated during a brainstorming session with the target group can be evaluated by the researchers afterwards.

During this project, the second form of brainstorming was used during brainstorming sessions with the target group, and both methods were used during individual brainstorming sessions.

Brainstorming Type 1
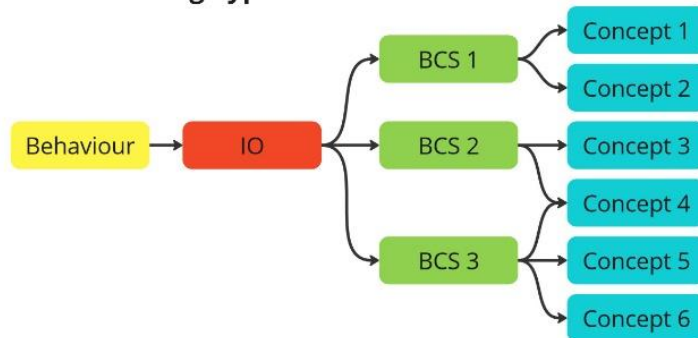
Brainstorming Type 2
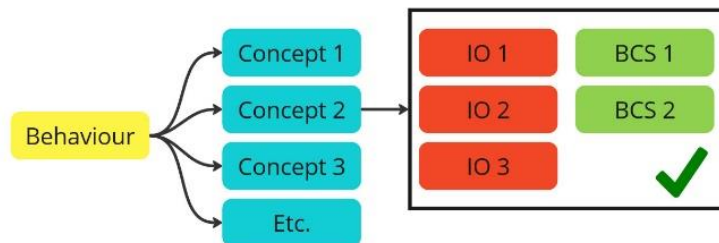
Evaluation and concept selection
The first version of the method contains the final steps of 'Brainstorming', 'Concept selection', and 'Concept evaluation'. However, during the project, a smaller selection of concepts was made during the evaluation as well. This step should also be added to the method overview.

Additionally, it should be made clear that the steps 'brainstorming', 'idea selection', and 'evaluation' are a circular process. If it becomes clear during the evaluation that none of the concepts are suitable, new ideas need to be generated, which then need to be evaluated again.

14.2 USER EVALUATION

Since the method is meant to be used by organizations like the FMF, it is important to make it useable and understandable for the employees of such organizations. Therefore, a booklet (Dutch) was made with a short explanation of every step of the method, and cards were for each of the Behaviour Change Strategies (see **Error! Reference source not found.**). These can be found in Appendix 9. This was sent to employees of the FMF, who were asked to give their opinion on both the method and the use of a booklet and cards as a medium to learn about the method and to use it during their projects.

The idea behind the booklet and the BCS cards was that a booklet would be a good medium to give enough information about the method, so that someone who does not have previous experience with design for behaviour change would be able to understand the method and use it in their own project, and cards was chosen as the medium to give information about the Behaviour Change Strategies because of their flexibility. Separate cards can be freely moved across the table, combined into sets, and passed around during brainstorming sessions. New BCSs can be added to the deck of cards in

case any were missed during this research, or when future research introduces new strategies. (Some of the cards are shown in Figure 33). An overview of the cards is also added to the booklet.

A poster was also considered as medium to explain the strategy, so that it can be put on the walls of interested organizations, but a booklet was chosen because it can contain more information and a more elaborate explanation for each step of the method

Motivatie	Motivatie	Motivatie	Motivatie
Verander de grootte van benodigde middelen Bijv. de grootte van donatie containers	Gebruik signalen om onbewust gedrag te stimuleren Bijv. pijlen of voetsporen op de grond	Verander de presentatie Verander het uiterlijk of andere sensorische factoren van producten of de omgeving om het gedrag aantrekkelijker te maken	Verander hoe het product functioneert Verander hoe iets (product, locatie, etc.) functioneert om automatisch duurzamer gedrag te creëren. Bijv. een apparaat met duurzamer verbruik
Automatisch 17	Automatisch 18	Automatisch 19	Automatisch 20
Vermogen	**Vermogen**	**Vermogen**	**Vermogen**
Maak het gewenste gedrag makkelijker uit te voeren of meer toegankelijk	Leer mensen de benodigde vaardigheden Bijv. door workshops, video's, etc.	Maak de gewenste gedraging makkelijk te begrijpen Maak het simpel, geef duidelijke stappen om te volgen, verkort te tijd die het kost om te begrijpen wat er verwacht wordt. De gedraging wordt zo als minder moeilijk beschouwd	Herinner mensen aan de gewenste gedraging Herinneringen zijn het liefst groot, duidelijk, dicht bij de locatie, en makkelijk te volgen. Mensen moeten de gedraging meteen kunnen uitvoeren na de herinnering
Fysiek 21	Fysiek 22	Mentaal 23	Mentaal 24

Figure 33: Strategy cards example

This booklet was sent to FMF employees, who were asked to answer the following questions:

- What is your first impression?
- Are there sections which are unclear to you?
- Would you use this method (or parts of this method) during projects, and why?
- Would you use the strategy cards during projects, and why?
- Which aspects about the method, booklet, or cards would you like to see changed?
- Do you have any further remarks?

These questions were answered by two FMF employees (Participants A and B). a summary of their feedback can be found below.

Figure 34:The strategy cards can, for example, be used to sort and group BCSs during brainstorming sessions

Positive feedback
A
- Clear, good structure

Improvement points
A
- The front-page picture does not fit the booklet
- Only the abbreviation FMF is mentioned, not the full name
- The example in step 1 is confusing, make it more explicit that this is an example
- Step 1 does not explain which type of behaviours there are, and whether they can be categorized
- Use one example throughout the whole booklet, to make it more recognizable
- Alinea 3 and 4 do not fit together properly, which makes it hard to follow.

B
- What are the perceptions and ambitions of various target groups?
- Why do people currently do what they do? This is also missing.

As can be seen, participant A mainly gave feedback on the structure of the booklet but was positive about the method, whereas Participant B criticized the method and mentioned some points which were missing according to them, namely more research about the target group, and about why people behave like they currently do.

During the current method, much attention is given towards finding barriers, or in other words, to discover why people do *not* act in certain ways. However, participant B pointed out that it can also be helpful to study why people behave like they currently do. This information about the current behaviour may provide new perspectives and insights which can be used to create new Intervention Objectives. Therefore, it will be added to the method as a separate step as well.

A more in-depth description of the target group based on information gained during the research will be added to the method as well. During this step, the target group can be more defined in order to create an intervention which fits their specific requirements.

14.3 STEP-BY-STEP EXPLANATION OF THE FINAL METHOD

After the method evaluation, a new version of the IBIS design method was created. Figure 35 shows the flowchart of this new method. To summarize, this section will contain a short explanation of every step of the final version of the method. Part of these steps have stayed the same as the previous version, so the explanation of these will be the same.

Problem definition
First of all, the sustainability issue which needs to be solved by designing an intervention needs to be defined. Research (E.g., Literature review, expert interviews) may be needed to gain a sufficient understanding of the problem. Research questions can also be defined at this stage.

Target group definition
Secondly, the target group needs to be defined. A more defined target group is likely to result in a more effective intervention. The target group will be more defined during the research.

Defining sustainable behaviours
During this step, an overview needs to be made of the behaviours which could be (more) performed by the target group to reduce the problem. Research (E.g., literature research or expert interviews) may be needed to define all these behaviours. Creating a visual overview is a useful tool to help find all the behaviours.

Selecting behaviour based on their PEG
To select impactful behaviours, the potential environmental gain of each behaviour needs to be defined. This can be done by literature review or with the help of (sustainability) experts. The behaviours with a low PEG are best to be excluded. Depending on the available time and other resources, behaviours with a medium PEG can be included in addition to those with a high PEG.

Determine the change potential
For the selected behaviours, the performance and willingness of the target group need to be determined to calculate the CP. This can be done with a survey. For each behaviour, a question about whether the participant performs the behaviour and a question about whether they are willing to perform the behaviour needs to be asked. The behaviour needs to be detailed and measurable (E.g., 'Buying 5 pieces of clothing per year', instead of 'buying few pieces of clothing per year'), and the same for both the performance and the willingness questions, so that they can be compared.

Behaviours with a low CP can be excluded, since it will likely be harder to motivate people to perform these (more motivation is needed), or they are already performed by most of the target group. An intervention aimed at these behaviours will likely have little impact.

IBIS Method version 2
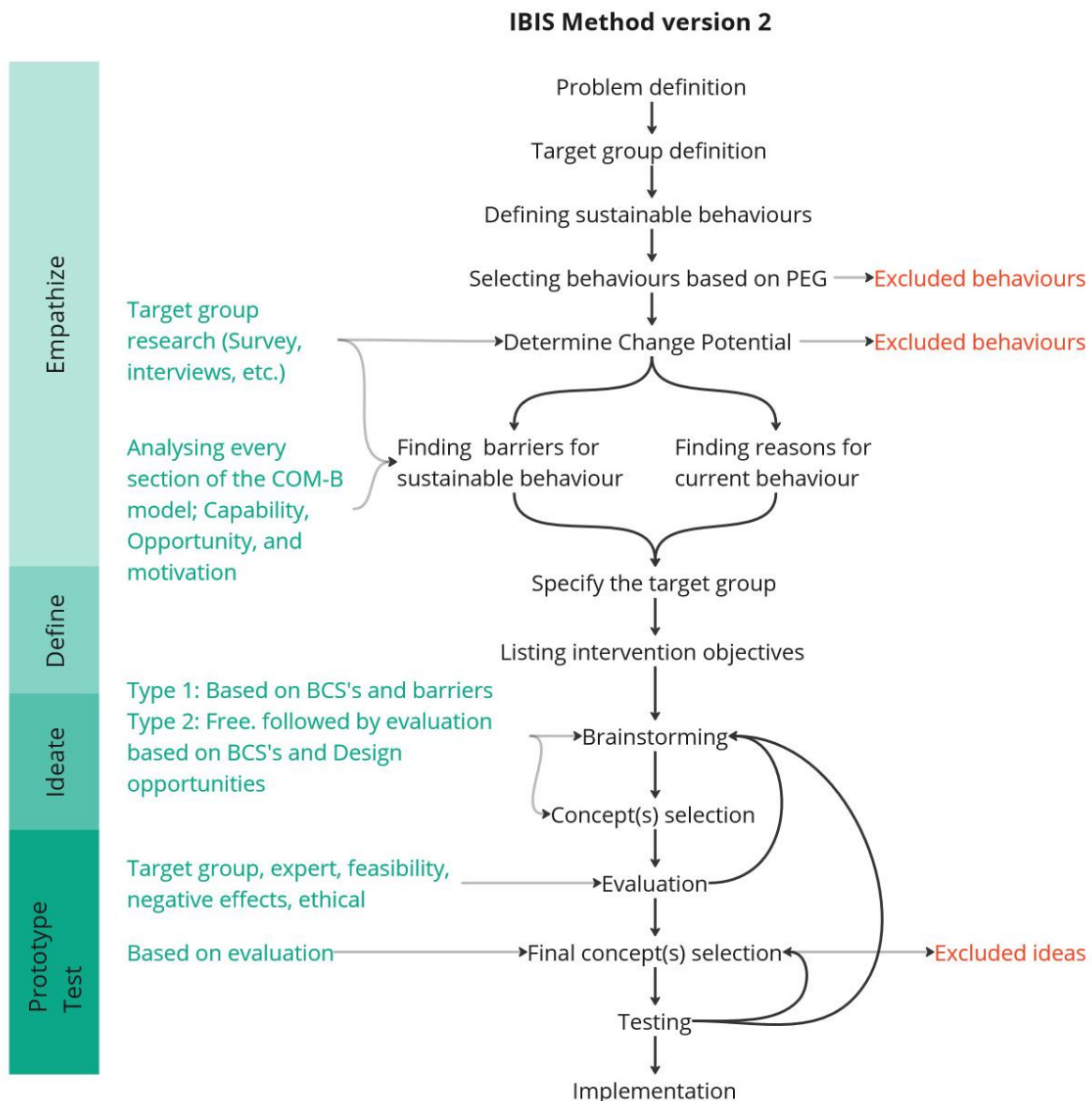
Figure 35; Method version 3

Finding reasons for current behaviour and barriers to sustainable behaviours
The final research objective is to find the reasoning behind the current (unsustainable) behaviours of the target group, and the barriers they experience which prevent them from performing the target behaviours. To make sure every type of is barrier found, the COM-B model can be used as a guideline for creating a questionnaire (See Table 6). This way, it can be studied whether a lack of performance is caused by a lack of motivation, a lack of capability, a lack of opportunity, or a combination of these factors. While creating the questionnaire, a balance needs to be found between asking specific questions to find each barrier and making sure that the list of questions does not become too long.

Specify the target group
Information about the CP, in combination with information about the demographics of the respondents, can be used to specify the target group for each behaviour. For instance, if young adults have a higher CP for a specific behaviour than elderly people, it would be logical to specify the target group for this behaviour towards young adults, since an intervention targeted towards them will likely have a higher impact. A target group can also be specified based on shared barriers they experience. For instance, if many middle-aged women tend to experience the same barrier when trying to

86

perform a behaviour, it is logical to create an intervention targeted towards this group which aims to reduce this barrier.

Finding Intervention Objectives
The information found during the previous step can now be translated into Intervention Objectives. For instance, if it turns out that the target group does not buy high-quality clothing, because they do not know how to recognize quality, an Intervention Objective could be to 'design a tool which helps consumers recognize quality', but it could also be to 'design something which teaches consumer how to recognize quality. As illustrated, one barrier can be translated into multiple Intervention Objectives. On the other hand, multiple barriers can be combined to create one Intervention Objective. For example, if a lack of awareness about the impact is a barrier to multiple behaviours, these can be combined into one Intervention Objective; 'Design something which makes consumers aware of the impact of sustainable clothing consumption.' Sorting barriers into categories can help to find these overlaps.

Brainstorming
Now it is time to start generating ideas for interventions to address the Intervention Objectives by using established Behaviour Change Strategies. This brainstorming can be done by the designers or researchers themselves, but it is also a good idea to involve the target group or other important stakeholders during brainstorming sessions. Two types of brainstorming were found.

1. Using the Intervention Objectives and Behaviour Change Strategies as starting points for concept generation
2. Using the Intervention Objectives and Behaviour Change Strategies as evaluation criteria after freely generating concepts

Both types can be used to generate concepts in different settings. Type 1 is suited for brainstorming with individuals who are involved in the project and knowledgeable about the IOs and BCSs, and type 2 is suited for both these individuals and external participants, such as members of the target group. Various brainstorming techniques (E.g., mind mapping, brainwriting, etc.) can be used for each type. The goal of this step is to generate as many concepts as possible.

Concept selection
One or multiple concepts can now be selected based on their (expected) feasibility, effectiveness, and impact. A feasibility-impact matrix can be used to create an overview of the feasibility and expected impact of generated concepts, in order to make a selection.

Evaluation/ final concept selection
The next step is to evaluate the chosen ideas in multiple areas. This consists of a target group evaluation (asking the opinion of the target group, or testing a prototype), a feasibility evaluation, a risk or possible negative effects analysis, an ethical evaluation, an expert review, and possible other subjects, depending on the project. Based on this evaluation, a final concept (or multiple concepts) can be selected. In case no concepts turn out to be fitting, more ideas can be generated during a new brainstorming phase, after which a new evaluation needs to be performed.

Testing
Behaviour change is a complex challenge. Since every context and target group is different, even the use of proven behaviour change strategies does not guarantee the effectiveness of an intervention. The objective of this phase is to test the effectiveness of the concept(s) within the right context. The best way to do this is by implementing it on a small scale. This allows the concept to be tested within the right context. For example, if a concept is meant to be placed inside clothing stores, the effect

on consumer behaviour can be observed by placing it in one store first. If this is not possible, a concept can also be tested by using a prototype in a controlled setting.

Implementation
If the concept proves to be effective during the testing phase, it can be implemented on a larger scale. Observations remain necessary to test the effectiveness over time and to decide whether additional interventions are needed to reach the desired results.

15 DISCUSSION

During this design research project, a new method for creating impactful behaviour change interventions has been created based on existing behavioural theories and design methods. This method has been tested by applying it during a research and design project in which a concept was generated for a behaviour change intervention for improving the sustainability of the clothing consumption behaviour of the Frisian population.

Both the development and application of the method have led to valuable information. By using the method during a design project, it has been tested throughout, and this experience led to a new version of the method in which every point of improvement were integrated.

In addition, the design project itself led to useful insights into the change potential of sustainable behaviours in Friesland, barriers which prevent Frisian people from performing these behaviours, and various concepts which address these barriers.

The main research question for this project was: 'How can the FMF motivate the inhabitants of Friesland to act more sustainably regarding clothing?' This question was already answered with the list of Intervention Objectives. This list contains every objective which can be addressed by the FMF to increase sustainable behaviour in Friesland. The question of how these objectives can be addressed was answered by creating and evaluating various intervention concepts.

The final concept is a combination of regulations which require regular clothing retailers to introduce second-hand clothing items in their stores and introduce or increase items made from recycled materials so that they meet a certain threshold, and a campaign which highlights the self-benefits of buying second-hand clothing. According to this research, this intervention, which addresses barriers found during the research and uses existing behaviour change strategies, has a high chance of successfully motivating the Frisian population to increase their sustainability regarding clothing. Additionally, more concepts which address the barriers and use of the BCSs have been generated and evaluated, such as sustainable consumption and sewing lessons in schools. These can all be considered by the FMF, who can read about the reasoning behind the concepts and their evaluation and decide for themselves which ones they want to develop.

All in all, this project resulted in a list of Intervention Objectives which show how the FMF can increase the performance of sustainable behaviours, multiple evaluated concepts which show how some of the Intervention Objectives can be addressed, and a design method which can be used by organisations like the FMF to design impactful behaviour interventions themselves during future projects.

15.1 LIMITATIONS AND POINTS OF IMPROVEMENT OF THE CASE PROJECT

This section will discuss the limitations of the design process. Some points of improvement are already discussed during the evaluation of the method (see section 0) and included in the improved version of the method. This section will discuss limitations and oversights which happened during this project but are not part of the method evaluation.

15.1.1 Survey

During the analysis of the survey data, it became clear that some aspects of the survey could have been improved upon. These points of improvement will be discussed in this section.

Mostly female and higher educated respondents
The respondents of the survey were mostly women, and the majority were highly educated. This may have given an unrealistic vision of the change potential and barriers experienced by the target group. To gain a better understanding of the target group, more men and especially more people with a practical education should have been included in the research.

Much information gained with the survey was not used
The survey contained many questions in addition to the questions aimed at finding the change potential and barriers to each behaviour. This includes information about the demographics of the participants, their stance towards sustainability, their feelings of responsibility and optimism towards sustainability, their knowledge about the impact of the clothing industry, their opinions about clothing quality, and information about their current clothing consumption behaviour (see Appendix 4). These questions were asked to gain a better understanding of the target group. However, most of this information was not used during the design process. A way in which this information could have been used was by creating a persona which represents the average of the survey participants. This persona could have been helpful during the idea generation and evaluation process; An extra evaluation based on this persona could have been added (evaluating the concept from the perspective of this persona).

Some 'performed behaviour' and 'willingness' questions did not match
Some of the performance questions in the survey do not have an accompanying 'willingness' question. For example, the participants were asked how often they discard a piece of clothing before it is damaged, but they were not asked about their willingness to only discard clothing after it is damaged. These extra performance questions were asked to gain more information about the current behaviour of the target group, but the lack of accompanying 'willingness' questions meant that no change potential could be calculated for this behaviour.

The change potential for the behaviour 'Buying less clothing' could not be extracted from the data from the survey because the current performance was not asked (only the willingness to perform this behaviour), so it was based on data found in other literature. Because of the large number of participants in that study, this data was seen as reliable and usable for this study. However, this means that the change potential for this behaviour is based on the Dutch population overall, not specifically the Frisian population.

When creating a survey, better care should be taken to match the 'performance' and 'willingness' questions, so that the change potential can be calculated for each behaviour.

Sustainable material

The behaviours 'buying sustainable materials', 'buying mono materials', and 'buying recycled materials were added to the list of behaviours after the survey was distributed and were asked in an additional survey which had eleven respondents. This means that the data gathered for these behaviours is less reliable than the data for the rest of the behaviours.

Survey question framing

Participants of the survey were asked how often they performed certain behaviours. The answers were 'Never', 'Almost never', 'Sometimes', 'Often', 'Very often', and 'Always'. This indicates how often the behaviours are performed, but no clear definitions of the answers were given. This means that the answers depend on the participants' definitions of the words. For example, for one participant, buying ten pieces of clothing second-hand instead of new might be defined as 'Often', while for another participant, this might be defined as 'Sometimes'. Clear definitions of the answers should have been given for each behaviour to gain a more reliable result.

Income demographic

The income of the participants was not asked in the survey. This would have been a useful demographic since people with a lower income may experience different barriers to sustainable behaviours than people with a higher income. This could have been used to make the target group for the intervention more specific.

15.1.2 Target group

The target group was defined at the beginning of the project as 'inhabitants of Friesland' since the aim of the design project was to design an intervention to change the behaviour of this target group. However, this target group is very broad. As Rau et al. (2022) pointed out, interventions are most effective when designed for a specific target group. Therefore, it would have been better to specify the target group more based on the demographics which were asked in the survey. This way, barriers specific to that target group could have been determined.

The change potentials of specific demographics have been determined for each behaviour, but these have not been used during the design phase. These could have been used to determine which specific target groups could be best focused on when designing an intervention for a specific behaviour, namely target groups with a high change potential for that behaviour.

This extra focus on the target group was added in the second version of the method, where the target group is more defined after the research phase. This ensures that the rest of the project is done with a specific target group in mind so that more specific (and more effective) interventions can be created.

15.1.3 PEG assumptions

Since there was no time to calculate the PEG of each behaviour during this project, the PEG found by PBL (Koch et al., 2023) was used. However, the PEG for some of the behaviours were not given in this source. Therefore, these PEGs were assumed based on the PEGs of other behaviours. The behaviours for which the PEG was assumed are 'wearing clothes more before discarding', and 'buying mono materials.

15.1.4 Evaluation and testing

The evaluation of the concepts was done with a small focus group of four people, on which the final selection of concepts was based. A larger focus group would have given a more accurate idea of the general opinion of the target group, which makes the chance of creating an effective intervention higher.

Due to time and resource constraints, the intervention concepts were not tested, so it cannot be said with certainty that they will be effective. However, according to the information gathered during the project about both behaviour change and barriers experienced by the target group, the selected concepts have a good chance of being effective.

15.2 LIMITATIONS AND POINTS OF IMPROVEMENT OF THE METHOD

Further evaluation and testing of the method
The IBIS design method has been evaluated and improved based on experiences gained during the case project, and the opinion of representatives of the target group for the method; Employees of organizations who want to create interventions for (positive) behaviour change. However, this focus group consisted of only two participants, which makes these results no very reliable. The effectiveness and usefulness of the final version of the method have also not been tested. This would be a good starting point for further research.

No guaranteed success
The method offers a step-by-step approach for the development of behaviour change interventions based on barriers experienced by the target group. However, there are countless and ever-changing factors which determine behaviour, which cannot all be studied and considered during a design project. The method aims to improve the chance of creating an effective and impactful intervention, but it does not guarantee success.

The list of behaviour change strategies can be added onto
Extensive research is done towards existing behaviour change theories, to find as much effective behaviour change strategies as possible. However, more strategies likely exist which are not yet added to the list. It is also likely that new strategies will be discovered in the future. The list of strategies is therefore not complete and can be added to and altered during future use.

15.3 FURTHER RESEARCH

Testing the final version of the method
As has been mentioned before, the final version of the method has not been tested. Further research is needed to examine whether the changes and additional steps improve the method, so that it can be used to create more effective behaviour change interventions. This research should include testing of the method during design projects performed by organizations like the FMF, to test whether it is suitable for such organizations, and testing of the interventions which are designed by using the method, to test if following the steps of the design method leads to effective intervention design.

Further testing of the concept
Before the concept can be implemented, it needs to be tested further. During this project only the general idea for the concept was evaluated by the target group. For it to be fully tested, prototypes need to be made and experiments need to be done to test the effect on various types of consumers. In addition to this, more evaluation and testing could be done on the concepts which were not selected by the small focus group during the evaluation.

More concept generation
During this project, only a part of the Intervention Objectives found during the research were used during the concept generation, so more concepts can be created for the IOs which were not addressed. More concepts can be created for the IOs which were addressed as well. This list of IOs

can thus be used during future projects and can be used by the FMF to create additional interventions for sustainable clothing consumption.

How to prevent moral licensing
Moral licensing was found during the literature review as a risk for the positive impact of behaviour change interventions. However, no information about how to prevent this was found in literature. This could be an interesting topic for future research.

16 CONCLUSION

To summarize, this project let to the development of the IBIS design method, which was made by connecting established behaviour change frameworks and design methods, and which can be used to break complex sustainable behaviour change projects down into approachable steps. This method can be used by both designers and organizations like the FMF during future projects. Additionally, the case project with which the method was tested led to concepts for sustainable behaviour change interventions, and to insights which can be used to create other effective behaviour change interventions which aim to motivate the Frisian population to act more sustainably regarding clothing.

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APPENDIX

SUSTAINABLE CLOTHING CONSUMPTION;

Integrating behaviour change frameworks into a stepwise design process for environmental impact
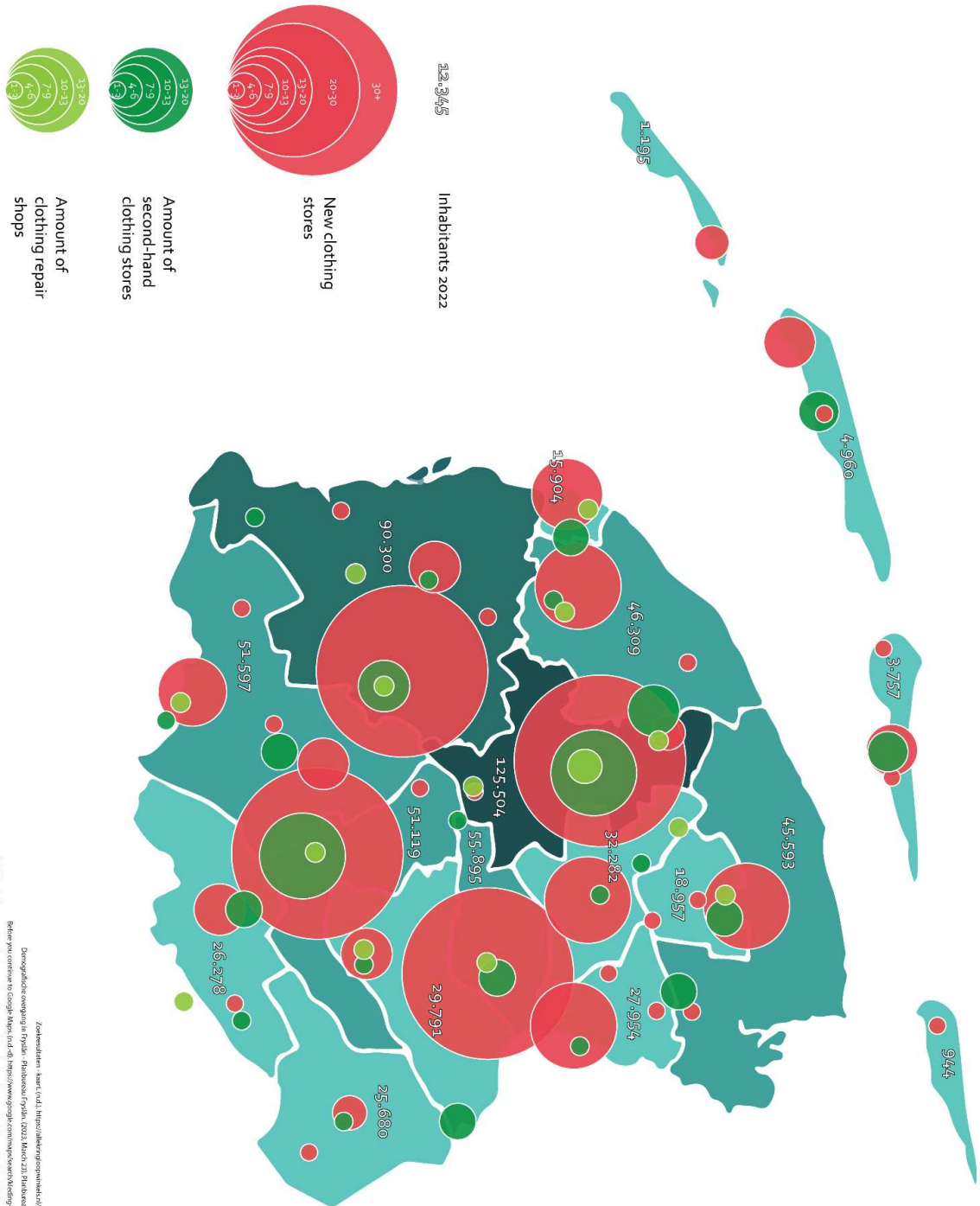
Renate Overdijk

Contents

1 Map (second-hand) clothing stores in Friesland

Figure 1: Map of clothing resources in Friesland

2 INTERVIEW NOTES

2.1 TEXTILE EXPERT

Date: 31-1-2024
Name: Jurrie Barkel
Role: Manager of the bachelor Fashion and Textile technologies and Master Innovative textile development at Saxion Enschede

Summary
What is your role?

- Manager of the Bachelor fashion and textile technologies and responsible for the Master innovative textile development
- 4 years now
- Started 8 years ago as teacher commerce and business economy
- Background at We fashion
    - Started during study (textile in Enschede)
    - Intern multiple functions
        - I have seen many aspects of the clothing industry
        - I know much about the clothing industry
            - Production
            - Collections (category manager)
            - How to grow profit
- After We, 5 years involved with Sheltersuit

What is the study about?

- Both clothing and textile
- Textile can be divided in 3 categories; natural, animal, and synthetic (half synthetic > viscose (made from natural material but processed to synthetic)
    - Sub variants within; cotton, linen, etc.
    - Every viber has it's own qualities
    - Material choice determines the final product
- From A to Z, how works the industry, from raw product to final product
- IPO but for textile/ soft materials

In what way focusses the study on sustainability?

- We have a certificate for Sustainable higher education for Bachelor and Master
    - Given by Hobéon
    - Sustainability in every component of the study
        - Education goals adjusted to the sustainable development goals
        - Teachers; SDG's in lesson programs
        - Education in sustainability
    - Sustainability becoming more and more important in the textile industry
        - Green deal > great effect on the textile industry
            - Producer responsibility

- o Importer has to take part in waste disposal
- Both sustainable production; transport, production location, energy consumption
  - o LCA during project to see all the aspects, think about all the sustainability aspects, where could they have impact
- And product itself
  - o Less waste by smarter use of fabric (pattern)
  - o Which materials
    - ▪ Recycling (mixed materials > separation is almost impossible)
      - You want as pure as possible materials
      - Saparation echnology is not reliable yet
        - o Clothing label is not reliable (materials and percentages)
        - o You have to scan the material
          - ▪ Technique is not reliable yet > No pure materials > effect final product (problems in production)
          - ▪ New machine in France > scanning and sorting automatically
            - Only surface material, Not inside (e.g. lining) > problem
              - o Fabrics have to be separated first > too much work
      - Mono material > more sustainable (recyclable)
      - About 1% is recycled
        - o Mono materials (e.g. 100% cotton)
        - o Work clothing > closed cycle (brands don't want the clothing to end up outside the cycle)
        - o Mattresses
        - o Easy to separate
        - o Sorting is manual labor

Retailers all use the same tricks to save costs (lower + middle (H&M, levis, etc.)

- Percentage of (cheaper) materials
- Amount of material (thickness fabric)
  - o Thin as possible while still feeling like quality
  - o Higher segment too (channel, Dior, etc.) > thicker fabric, but using polyester (cheaper materials)
- Number of stitches > less thread needed (can save miles of tread for large batches
  - o High end has more stitches
- All companies want to buy as cheap as possible
  - o High profit > needs to cover cost
  - o Not much profit

More expensive does not mean higher quality

- Needs knowledge
- People can only rely on price and marketing

How can we give people awareness about what is good quality?

- You have to teach people what to look for
- Electronics have a sustainability brand
    - o Determined by multiple components
    - o Can be done in the textile industry
        - ▪ Determining criteria
            - • Stiches
            - • Weight
        - ▪ Debatable; More stitches > longer lifespan But more material used
            - • What is sustainable?
            - • LCA ?
            - • Industry is in debate
    - o We have to produce less
        - ▪ We buy more and more (not only primark, all retailers)
            - • Industie feeds this
        - ▪ Industry is build to sell as much as possible
    - o Switches are happening
        - ▪ Companies want to have less stock (money which can't be used)
        - ▪ New textile law > have to pay money to import and involved in recycling
            - • More mindful about purchasing
                - o What does the consumer want?
                    - ▪ Less change for unsold clothes
                - o Cycle of a year, companies have to decide a year in advance what they want to sell
                    - ▪ What will the trends be? (trend forecasters)
                    - ▪ Treads and fabrics have to be even earlier (2 years)
                    - ▪ Cycle is becoming shorter (e.g. SHEIN, but also other retailers) (argument of SHEIN; we produce less waste)
                        - • Still need time to produce
                        - • Shorter cycle > better prediction of trends > less waste
            - ▪ More durable clothing means longer cycles
                - • Companies want clothing to be used as short as possible > more purchases
                - • New collections > people think they have to buy something new

- If you want people to buy less clothing, you have to give them less options
    - o Companies have to offer less choices, but spot on choices
        - ▪ Shorten chains > better predictions
    - o Other business models
        - ▪ How can I lengthen the lifespan of a product?

6

- How do I keep making money despite this?
- Future; Digital avatar, being able to fit clothing to avatar (adjust), made to order in your size
  - E.g. Shein; Shortening of production chain, owning the whole chain > control over materials, production, sales > better way to control
  - We have to think about where to produce clothing (Europe, even Netherlands)
    - C&A; production location in Germany for denims
      - Cost efficient but expensive for C&A (60 euros for jeans)
      - How to automate? > people are expensive
- Other future scenario; 3D printing of clothes, personal size
- Short therm
  - Currently working on recycling
    - Improvement of technologies
    - Less need for raw materials/transport
    - Current quality of recycled material is low
      - Differences in colour, less intense colour
        - Consumer would probably not mind this if there is less options
        - Currently 2% color difference tolerance in the industry
          - Many pieces are rejected

What can consumers do?

- Buying second hand
- Buying less
  - But how?
  - Organisations which make visible what honest products are
    - Keuringsdienst van waren
    - Accesible way to show how industry works > reaches people
      - Shows people how they are being manipulated (e.g. illusion of choice
      - If people want laws > pressures government
        - We don't want the choice, we want one good product
    - Organisations who lead countermovements
      - FMF too
    - If people understand how they are malipulated, they can make better choices
      - Do I need this or am I being seduced to buy this?
  - Success of secondhand stores influences buying behaviour of people
    - Influencing buying behaviour is very difficult, but the success of counter movements and alternatives (like Vinted), if that works, people will act on those automatically.
      - Social influence (positive stories about alternatives)
- Opportunity; choice

- Capability; Do I know what I buy? Knowledge about the product. Price; defines whether people buy it. (Whether they can, or they can buy more cheap items instead of one expensive one)
  - There is always price vs sales > higher price means less sales (finding optimal point)
  - More sustainability > less offer for higher prices
    - All shops have to do this, then it would work
      - Less offer > less choice > Less sales > higher price so more value attached to clohing
      - Won't the consumer dislike that?
        - If we would not have so much choice, consumers would be more satisfied with what they have and add more value to a product. (like 80 years ago; people took very good care of their clothing, more repairs)
        - Was clothing better quality back then?
          - Not per se
          - More mono materials
          - Better quality because people knew it had to last longer
            - More knowledge about how to make clothing long lasting
            - After that the industrialization of clothing came the mentality of producing more and cheaper
              - Out of balance
        - Can we go back to how it used to be?
          - Has to be self fulfilling
          - We have to have movements who cause that
          - Retailers are thinking about how to have less stock and less waste
            - Because textile law (upv)
          - How can we recycle in our own chain?
            - Can become cheaper in the long run
            - Not yet; small scale and lower quality (less strong, more rough, less color intensity)
          - Either the industry decides the trend, or consumers will push for changes
            - Like you see now in shops; new clothing inspired by vintage clothing, because of rise in populairity
            - Stores look at what people wear > influences collections
              - Clothing can have imperfections now (accepted)
              - More possibility for using recycled fabric (imperfections are more accepted) and for combining used clothes into new clothes

8

Brainstorm ideas opinion?

- Mindfulness; Making people mindful about manipulation can help
- Awareness tool about how to take care of clothing exists, but people don't do it
- Good feeling from something else; If people get the same satisfaction from other activities, they don't feel like they have to go shopping. But how are you going to do this?
- Recognising quality
  - o Decision tree is hard because of the many aspects > leaves options out which could be very suitable for the situation
    - ▪ Ever option as positive and negative aspect
  - o Make people aware of the choices, that could work
  - o Are there really good options?
    - ▪ No
    - ▪ Mono materials are easier to recycle
    - ▪ Both natural and syntactic have up and downsides
    - ▪ Buy nothing
      - • But people have to eat
  - o Is buying better quality more sustainable?
    - ▪ Probably yes
    - ▪ Less material
    - ▪ More value attached to clothes
- Shop sell secondhand; Could work, but they have to do this. There are some initiatives (urban outfitters had a second hand section in Germany(?)), don't know if it worked. Donating is already possible in some shops
  - o Part of textile law?
  - o Money earned through textile law should be invested in recycling technologies
- Sustainability label
  - o Could help for awareness if it is trustworthy for consumers
    - ▪ Standardized tests are done already
    - ▪ Requirements set by retailers
    - ▪ What will be the iso norms?
      - • No laws about quality yet
      - • Martindale (wear resistance)> how high should it be? (Does not have to be too high(overcapacity), does not have to be as strong as a couch))
      - • Color tolerance
      - • Decided by retailers (high safety standard, higher than necessary)
        - o Could be good for wear resistance but may not be good for color (different painting process needed > could be bad for environment)
        - o If consumers are less picky, retailers will be less picky
        - o Sustainably choice can mean risk for retailers
      - • Industry need to agree about norms
        - o Sustainability lable; What is sustainable
          - ▪ Retailers don't agree over what is sustainable
          - ▪ France has a label (centrally organized)
      - • What does a label bring? Is it really sustainable? Can be questioned

- Label is an indicator for people, and motivation for companies to produce better
- Data transparency
  - Needs a lot of data for the whole production chain
    - 4 levels
    - At least first 2 levels needs to be transparent
      - 1st Supplier of the product
  - Digital product passport
    - You can see where it comes from
    - E.g. QR code
  - Now worked on (e.g. textracer)
    - Mapping production chain of clients
    - Using blockchain > Data is owned by everyone
      - People are afraid to share their data (company secrets)
      - Afraid that they lose advantages
  - Companies are working on gathering and sharing data
- Show price per year
  - Don't believe in that
  - Value is in use and how much it is liked
  - Better more mindfulness
- Teaching to donate damaged clothes
  - Yes, good
- Transparency about donations
  - Could help
  - If I know it will end up in a good place > more motivation
  - Could go to Africa, but at least it is given a second change
- Deposit on clothes (+ second hand sold in stores)
  - Could work
- Secondhand section in normal stores
  - Sometimes secondhand stores are not attractive
  - Could help to have it in an existing store
    - They know how to sell products/make store attractive
- Lessons at school
  - Initiatives exist
  - Prinsenschool > 6 weeks project about clothing and textile
  - Awareness about textile
  - Good for coming generations
- TV program
  - Fun idea
  - Good way to share tangible information

How recycling works

- Sorting in…
  - Good quality > second hand store
  - Slightly less quality > shipped to other countries (e.g. Africa) > causes problems there (pollution)

10

- Not wearable > burned or trashed

Biggest factor > produce less clothing

2.2 CIRCULAIR FRIESLAND

Date: 15-09-2023
Name: Erik Fledderus
Role: Manager Circulair chains at Circulair Friesland

Summary
- Circulair Friesland
  - o Organisation with 150 members
  - o Found in 2016
  - o Goal; to make sure resources stay in the region, to connect and support companies who want to make a circular transition
  - o Not only focus on materials and resources, but also water quality, biodiversity, human health, culture preservation.
  - o Very active in the building sector, circulair plastic sector, recreation sector, and more
    - ▪ E.g. Recel (cellulose recycling, could also come from textile), Omrin
  - o No focus on textile yet, but they also focus on making circular economy more prominent in companies and governments
  - o Focus on companies, the government, and educational institutions
    - ▪ Not on consumers, but on their roll within a company
  - o First focus on reuse, then recycle, etc.
    - ▪ Some companies focus on reduce, by offering repairs, for example
      - • Opnieuw > recycling office furniture
    - ▪ Hard choice for a company > often less profit
  - o Role in project:
    - ▪ Combining parties to recycle/reuse textile
    - ▪ They have many contacts in the recreation sector
      - • Can be used to show ideas people
      - • E.g. locations for an exhibition about sustainable textile
      - • Only if those organizations are open to it
- Erik Fledderus
  - o Manager circulair chains
  - o Focus on building and plastic sector
  - o 'Textile should also fall in the category plastic, since it contains a lot of plastic'
- Other organisations
  - o Groningen has a textile hub
    - ▪ Developed by the municipality and other parties
  - o Many second hand clothing stores in Leeuwarden
  - o Omrin/Reshare
  - o About 2,5 million clothing collected in Friesland
  - o Not many initiatives in Friesland yet, other than secondhand stores
  - o Circo; Method with which companies can measure their circularity. Looks at the whole chain to see which points can be improved

- Circulair Friesland helps them to set up a new circular business strategy, by financing new innovations, and by introducing them to other parties with the same goal.
  - ReShare
    - Re-Imagine campaign; Inviting designers to design clothing with reused textile
    - Campaign with memory labels attached to second hand clothing
- New textile law
  - Very important
  - For many parties in the sustainable textile sector, it could not go fast enough
    - It needs to be more strict, it needs to be enforced, the goals should be less far in the future, according to them

- About behaviour change
  - People are influenced a lot by availability
    - Many people think being sustainable is hard, difficult, expensive
      - Often not based on facts
    - If availability is created, a change to do something, and it is made tangible, many people are willing to act.
  - It is important not to forget about the influence of governments and companies on behaviour change, for example for making options availabe

2.3 MILIEU CENTRAAL

Date: Sophie Postma
Name: 15-09-2023
Role: Behavioral researcher at Milieu Centraal

Summary
- Milieu centraal
  - Organisation which gives advise regarding sustainability
  - Set up by the government
    - Funding from the government for assignments
    - Much freedom during execution
    - Increase of awareness and activation
  - Behavioural research team
    - What is the consumer behaviour?
    - Motivations and barriers for behaviour
    - Giving advise based on research
    - Procedure
      - Literature research
      - Focus/ Target group
      - Surveys (behavioural factors, sustainable behaviour)
      - Developing interventions
      - Testing by measuring effect
    - Research:

- Monitor sustainable living
  - 98 sustainable behaviours analyzed under a large group, in 2021 and 2023, to see the difference. Also about clothing. Whether behaviours are done or whether people are willing to do them. Motivations and barriers
- Textile participation project
  - Motivations for sustainable behaviour
- Sophie Postma
  - Behavioural researcher
  - Works there for two months
  - Background in Psychobiology

- Behaviour
  - Impulse purchases
    - Happens a lot in clothing
    - Lots of temptations on e.g. social media
  - People buy clothing to express their identity
  - Attractiveness of fast fashion
    - Trending clothing
  - They use the COM B model, behaviour change wheel
    - Capacity
    - Opportunity
    - Motivation
    - Best results if these are all improved
      - 'Like a fire needs fuel, heat, and oxygen'
- Initiatives
  - 30 days challenge
    - Challenging people to not buy clothing for 30 days
    - Focused on young, highly educated women
      - They buy most clothing
    - Sharing knowledge
      - Why should you buy less clothing?
      - Which sustainable behaviour exist?
      - Preventing impulse purchases
        - Giving information on how to prevent impulse behaviour
    - Not yet tested, still in development

2.4 SALVATION ARMY

Date: 13-10-2023
Name: Marlies Smedinga
Role: Marketing department of ReShare

Summary
- ReShare is part of the salvation army
  - Non-profit
- Reshare's mission is to give every donation a new purpose

- o Best if it can be reworn (sold via ReShare stores)
  - o Otherwise recycle
  - o The do not export outside of Europe
    - ▪ Exported secondhand clothes cause problems in e.g. Ghana > Not ethical
    - ▪ They only export reusable clothes to partners within Europe
- Municipalities decide which company/organization can place a donation container based on price, story or vision.

- Marketing focus
  - o Second hand is 'hot and happening'
    - ▪ First they had to convince people to choose second hand, not anymore
    - ▪ Still some people who need convincing
  - o They now focus on convincing people to buy durable clothing
    - ▪ Bad quality fast fashion can often not be reused
    - ▪ If people buy durable clothing, more can be reused
    - ▪ Fast fashion is becoming a bigger problem
      - • Ultra fast fashion like Shein > worse quality
        - o Toxic materials found in Shein clothing (childrens clothing too)
        - o High change that clothing is damaged when it is donated
      - • People need to become more aware of the impact of clothing on environment and people in production
    - ▪ People are not used to look at the quality of the clothing in the store (thickness of the fabric, quality if the seams)
    - ▪ You do see more critique on social media
      - • Accounts who share easy to understand information (Remake our world)
      - • Sharable content in meme-format
      - • Understandable for people without knowledge of fashion and sustainability
      - • Battling against very good marketing of fast fashion chains
  - o Also a focus on donation
    - ▪ A lot of clothing still ends up in trash
      - • ReShare would be happy with more donations
    - ▪ Donations have declined (also for competitors)
      - • Probably because of fast fashion
        - o Quality is so low, people don't think it's worth donating
        - o But reshare could still recycle the fabric
      - • Also because of Corona
        - o People have cleaned out their closets
        - o They received huge amounts of donations during that period
        - o Not much new clothing was bought
        - o Can be seen in the whole secondhand clothing market
      - • Maybe people have already started to buy less clothing
        - o That would be a pleasant reason
      - • Quality of Donations in Friesland is lower then in the rest of the country
        - o Could be because of income difference

14

- o Quality clothing is sold via Vinted
- o Huge difference with e.g. Tilburg
  - ▪ Always working on tenders (If there is no container, people will not donate)
  - ▪ Also alternative ways of collection
    - Cooperation with PostNL, Dobbi locations (Dry cleaner), retailers (WE, Jeans center)
    - Works well
    - So people don't have to travel far with their bag of clothes, can be combined with other activities
    - In Amsterdam, Tilburg and Breda, clothing is collected from home
  - ▪ People throw trash in the donation containers > Ruins the clothing
    - Cooperation with municipalities to prevent this
    - Differs per municipality, more trash in Leeuwarden the smaller towns in Friesland
- o Motivation
  - ▪ Focus on 'warm glow' feeling of doing something good
  - ▪ Using the good name of the Salvation Army (widely known)
  - ▪ Making donating easier
- o Channels
  - ▪ Via social media
    - o At home clothing collection on Amsterdam, Tilburg, Breda; Online campaign to show you make someone happy with you clothing
  - ▪ Via the stores
    - Centre of large cities
    - Most important tool to share message
    - Stores made to not look like secondhand stores
      - o Clean, smell nice, spacious
      - o To get rid of stigma of poverty and unhygienic
  - ▪ Via the containers
    - Should be clean and good looking
    - The often don't look good in Friesland > vandalism
  - ▪ Not via TV
    - Not enough budget
  - ▪ Folders
    - In the past (old fashioned)
  - ▪ Cooperation with designers
    - E.g. Sjaak Hullekes, Voddemannen, and other designers
      - o Making new clothes out of 'non-reusable' donated clothes
      - o Good way to show that you do not need something new to make something new
      - o Successful, Voddemannen has sold many clothes
- o Research questions
  - ▪ What motivates someone to donate clothes?
  - ▪ Current situation
    - How well do people know us and what image do they have of us
- o Barriers for more circularity
  - ▪ Financial barriers
    - New developments are very expensive
    - E.g. chemical recycling (not yet in the Netherlands)
    - They do have fiber sort machine

- o Measures what the exact materials and quantities are
  - ▪ Need to know for customers of batches
  - • Government money would be a great help
- o New textile law
  - ▪ Has caused new cooperation (JOSH V, IKEA)
  - ▪ Some companies are interested, others do not act yet because it is not enforced

3 BEST PRACTICES

These examples of sustainable (behaviour change) initiatives were found during the project. They were used as inspiration during the brainstorm sessions, and to see whether the generated ideas did not already exist.

The fashion pact
The fashion pact is a word wide non-profit organization which aims for a "nature-positive, net-zero future for fashion (The Fashion Pact, 2024). They organize collaboration between clothing producers and share knowledge about sustainable clothing production. There 'areas of action' are a lower impact production, lower impact materials, restoring nature, and renewable energy

Remake our world
Remake is an organization which addresses human and environmental injustices in the fashion industry. They collaborate with fashion workers, lawmakers, civil society organizations, businesses, and other individuals. They campaign to pass laws to hold brands accountable for labor violations and environmental impact, and spread awareness about the impact and solutions. (Cheng, 2024)

Omrin Friesland
Omrin is a waste collector and processor in Friesland. The collect and sort every kind of household waste, including textile. According to them, textile products are either sold in their second-hand stores (Estafette), or recycled. They collected an average of 7 kilos of textile per inhabitant in 2021 (Omrin, 2022).

Textile hub Groningen
The province of Groningen aims to be trash-free in 2030. To support this, the municipality of Groningen, the Alfa-college, and the Hanze University of Applied Sciences, have opened a textile hub. The hub organizes small scale textile recycling and education about sustainable textile production for collage students. They aim to be an example for production companies who can organize larger scale textile recycling (Jansen, 2024).

Week of secondhand textile
Since 2019, ReShare organizes a yearly 'week of secondhand textile' to unite the textile branch and highlight the importance of textile reuse. They invite producers to create their own initiatives or campaigns to launce during this week. The Re-imagine campaign, which will be explained next, was one of these initiatives. (Week van Tweedehands Textiel, n.d.)

Re-imagine campaign
ReShare (textile reuse and recycling branch of the salvation army) created the project ReImagine, during which they challenged 5 clothing designers to create 5 outfits, using only non-reusable textile

from their sorting centers. The winning collection was shown during the 2022 Dutch Sustainable Fashion Week. They aimed to create a conversation topic about the future of the fashion industry, and the possibilities of reusing textiles. (ReImagine, 2022) (S. Smedinga, personal interview)

ReShare your memories
During the 'week of secondhand textile' in 2021, ReShare organized a campaign during which people who donated clothing in their store in Nijmegen received a card on which they could write a personal memory about the donated items. This way, these memories were shared with the next owner of the items. They aimed to attach more emotional attachment to clothing; Something which has been declining in the age of fast fashion (Intonijmegen, 2021).

Style workshop
Milieu Centraal (in collaboration with Psychology magazine) offers a free online training for people to find their own fashion style. They aim to encourage participants to buy less clothing by teaching them the effect of purchasing clothing on the brain, how to resist temptation, and how the express (sustainable) values trough clothing. They also teach participants how to make new combinations with owned clothing, by taking color and size into account. (Milieu Centraal, n.d. -b)

Milieucentraal's 30 days challenge
During an interview, S. Postma from Milieu Centraal mentioned that they are going to launch a campaign during which they challenge people not to buy new clothing for 30 days. The challenge will be focused on young, highly educated women, because they buy the most clothing. The aim of the campaign is to share knowledge about sustainability and impulse purchases, and the actions someone can take to lower their clothing consumption. (Milieu centraal, n.d. -b)

Studio GROFF
Studio GROFF (Groningen fair fashion) is an initiative of 6 individuals with a passion for sustainable textile. They organize workshops about clothing repair and upcycling, education programs for schools, lectures, and other campaigns against textile waste. They want to focus on a 'positive change' and want to show that people can cause societal change when working together. (GROFF, 2024)

France subsidizes clothing repair
From October 2023, inhabitants of France can receive a credit of 6 to 28 euros from the government to let their damaged clothing or shoes be repaired by a cobbler or tailor. The French government will invest 173 million over a period of five years, to encourage people to repair their clothing, instead of replacing them with new items. (Jaynes, 2023)

France might penalize fast fashion
In addition to the repair credit, members of the French parliament proposed a bill which would charge fast fashion brands up to 50% extra per item sold in France, to offset the environmental impact of the industry. They argue that the huge number of options and low prices create buying impulses and a constant need for renewal in consumers, which is why they want to penalize it (Bennett, 2024). The bill also includes a ban on advertising for cheap textiles. At the time of writing, the bill has been approved by the lower house of parliament, but still requires a vote from the senate. (The Guardian, 2024)

Fair fashion route Utrecht
In 2016, students from the Hanze University of Arts organized a fair fashion route trough the city of Utrecht. Lead by a guide, participants followed a route which passed past shops who produce clothing in sustainable ways. The shops themselves had each prepared an experience during which

they explained the participants how they contributed to sustainability, in addition appetizers, gifts, and discount vouchers. According to the organizers, it was a successful even. (*Door Sofie IJzerman, Initiatiefnemer Fair Fashion Route – Youngandfair.nl*, 2024)

Clothing loop
Clothingloop is a platform on which people can create or join a clothing loop: a group of people in a small area who pass along bags of used clothing. Participants in a loop can take clothing they like out of the back, and add their own unwanted clothing to pass on to the next person in the loop. The initative was started in the Netherlands during corona lockdown, and there are currently many loops in the Netherlands and other countries in West-Europe. Clothingloop claims to have saved thousands of kilos of clothing through this swapping system. (*Home | the Clothing Loop*, n.d.)

Finnish Textile deposit program
The Finnish city of of Lathi have created a program called the 'Texile Deposit scheme'. Citizens receive coffee vouchers and passes to the local pool in exchange for their donated clothing. It was very successful; When it was introduced, 500% more clothing was donated. They plan to introduce it in the rest of Finland, and across the EU by 2025. (Hammon, 2023)

Clothing swap organized by student organizations
The 10th of April this year (2024), the student organizations S.G. Daedalus and S.A. Proto from the University of Twente organized a clothing swap event for students. Students could hand in their unwanted clothing, which were then laid out on tables to be picked up by whoever wanted them. Loud background music added to the fun experience of this event.

4 SURVEY RESULTS

4.1 GENERAL INFORMATION

Demographics

Category	Amount	Percentage (%)
All respondents	98	100
Gender;		
Men	30	30.6
Women	67	68.4
Other gender	1	1
Age:		
16-25	24	24.5
26-40	26	26.5
41-60	24	24.5
60+	24	24.5
Education: *		
Lower	1	1
Middle	15	15.3
Higher	82	83.7

Living in Friesland?		
Yes	79	80.6
No**	19	19.4
Which Municipality?		
Leeuwarden	34	34.7
Heerenveen	24	24.5
Other *	21	21.4

Lower; Preschool, PRO/VMBO, Middle; HAVO/VWO, MBO. Higher; HBO/WO bachelor, HBO/WO master, PhD
**Provinces; Overijssel (8), Groningen (5), Noord-Holland (2), Gelderland (1), Drenthe (1), Utrecht (1), Zuid-Holland (1)*
*** Smallingerland (4), Súdwest-Fryslân (4), De Friese Meren (3), Tietjerksteradeel (3), Waadhoeke (2), Weststellingwerf (2), Noardeast-Fryslân (1), Ooststellingwerf (1), Achtkarspelen (1).*

Sustainability

	Mean	Median	Mode	St. Dev
Do you think you live your life sustainably? (Scale 1-10)	6,642857143	7	7	1,253860019
How often do you take sustainability into account in daily life? (Scale 1-10)	6,867346939	7	7	1,622253461

Feelings of responsibility and optimism

Both feelings of individual responsibility, and optimism about the environment are important for motivation to perform sustainable behaviours (van Stralen, 2011). To measure the feeling of responsibility of the respondents, the following question was asked: *'Do you think you and other civilians are responsible for the prevention of climate change?'*

44% of respondents find themselves and other civilians very responsible for the prevention of climate change. 46% think they are partly responsible (together with companies and/or the government), and 8.2% thinks they are not responsible. This indicates that most of the respondents feel at least partly responsible for the environment.

To measure optimism about the environment, the following two questions were asked:

1. Do you think we can halt climate change if enough people start acting more sustainably? (On a scale of 1-10)
2. Do you think enough people are willing to act more sustainably? (On a scale of 1-10)

The first question measures the general optimism about the impact of sustainable behaviour. People who are sceptical about the impact of individual sustainable behaviour on the environment, as well as people who think climate change cannot be reversed, may be less motivated to perform such behaviour. This question was answered with a mean of 6.7/10. (St. Dev: 2.27)

The second question measures optimism about the behaviour of others. People who are pessimistic about the willingness of others to behave sustainably might be less motivated to behave sustainable themselves. This question was answered with a mean of 4.8/10 (St. Dev: 1.7).

As can be seen, the respondents are quite positive (although divided) about the positive impact of individual behaviour. However, they are less optimistic about the behaviour of others, which might impact motivation.

	Mean	Median	Mode	St. Dev
Do you think we can halt climate change if enough people start acting more sustainably? (Scale 1-10)	6,705263158	7	6	2,268534461
Do you think enough people are willing to act more sustainably? (Scale 1-10)	4,831578947	5	5	1,711367697

Question: Do you think you and other civilians are responsible for the prevention of climate change?
(Scored based on feeling of responsibility)

Answer	Score	Amount	Percentage
Yes, very much	2	44	44.9
Yes, A little	1	36	36.7
No, only companies are responsible	0	0	0
No, only the government is responsible	0	0	0
No, the government and companies are responsible	0	2	2
Everyone is responsible	1	7	7.1
Civilians and businesses are responsible	1	3	3.1
I don't believe in climate change	0	4	4.1
The Netherlands is not responsible	0	2	2
Score 0 Total	0	8	8.2
Score 1 Total	1	46	47
Score 2 Total	2	44	44.9
Score Mean (0-2)	1.37		
Score Medi (0-2)	1		

Opinion about clothing quality

Participants were asked about their opinion about the quality of fast fashion clothing (H&M). The results can be seen below.

Opinion quality H&M clothing	Amount	Percentage

Good	5	29,4
Good enough for how often I want to wear it	6	35,3
Good enough for the price	12	70,6
Mediocre	1	5,9
Bad	0	0
Total	17	100

Knowledge

The participants were asked to read the following text (translated form Dutch);

"The clothing industry is one of the most polluting industries in the world. The production of new clothes causes 8% of the global pollution, which is more then all international air traffic and shipping combined

The production of clothing is one of the most important causes of climate change, loss of biodiversity, and water, air and ground pollution.

Luckily, we can do something about this! By, for example, buying less clothing, buying more durable clothing, buying more second hand, and taking good care of our clothing, we can make sure that less new clothing needs to be produced, and that less old clothing ends up in a landfill.

If every Dutch person would buy 6 pieces of clothing less per year, this would save as much as going around the world by car 85.000 times!"

This information was given at the end of the survey, as to not influence the previous answers. The participants were then asked whether they already had this knowledge.

Did you know this?	Amount	Percentage
I already knew this	31	31,6
I knew part of this	60	61,2
I did not know this	7	7,1
Total	98	100

The participants who answered that they did not know this before, or knew only part of this, were asked whether they would want to change their behaviour, after they received this information.

Do you want to change your behaviour, after learning this?	Amount	Percentage
Yes, very much	17	25,4
Yes, a little	40	59,7
No	10	14,9
Total	67	100

Finally, these participants were asked which behaviour they wanted to start performing (multiple answers possible).

	Amount	Percentage
Nothing	8	11,9
Buying less clothing	23	34,3
Buying better quality clothing	32	47,8
Buying more second hand instead of new	19	28,4
Donating more clothing instead of throwing them away	20	29,9
Repairing clothing more often	14	20,9
Renting clothing	3	4,5
Borrowing clothes from friends/family	5	7,5
Lending clothes to friends/family	4	6
I already behave sustainable enough	6	9,0
Informing other	1	1,5
Buying sustainable clothing	2	3,0
Total	67	

Current amount of consumption

	Amount	Percentage
Pieces of clothing bought per year		
<1	0	0
1-20	75	76.5
21-40	21	21.4
41-60	1	1
61-80	1	1
81-100	0	0
>100	0	0

Mean: 15.3 (min: 6.3, max: 25.3)
Mode: 1-20

Percentage second-hand clothing		
0%	25	25.5
<10%	29	29.6
10-30%	9	9.2
30-50%	9	9.2
50-80%	18	18.4
80-99%	7	7.1
100%	1	1

Mean: 26.0 (min: 19.9, max: 31.9)
Mode: <10%

Pieces of clothing discarded per year		
<1	7	71
1-20	83	84.7
21-40	6	6.1
41-60	2	2

Mean: 11.4 (min: 3.0, max: 20.7)
Mode: 1-20

	Answer	Score	Amount	Percentage
I only buy new clothes	Totally agree	2	39	39.8
when I really need it	Partly agree	1	47	48.0
	Partly disagree	-1	10	10.2
	Totally disagree	-2	2	2
	Mean: 1.1			
	Mode: 1 (partly agree)			
I have a lot of clothing in	Totally agree	2	11	11.2
my closet which I rarely	Partly agree	1	39	39.8
wear	Partly disagree	-1	31	31.6
	Totally disagree	-2	17	17.3
	Mean: -0.1			
	Mode: 1 (Partly agree)			

4.2 PERFORMED BEHAVIOUR

To measure the Change potential first the performed behaviour needs to be measured. To measure the performed behaviour, participants were asked how often they currently perform 17 behaviours. They were asked to answer on a scale from 'Never' to 'Always'. The table below shows the answer possibilities and the assigned scores per answer

Answer	Score
Never	0
Almost never	1
Sometimes	2
Often	3
Very often	4
Always	5

The statements and results are shown below.

Number	Behaviour
1*	Wearing a piece of clothing more than 20 times, before discarding
2*	Only discarding a piece of clothing after it is damaged
3	Renting a piece of clothing
4	Borrowing clothing from friends/family
5	Lending clothing to friends/family
6	Buying a piece of clothing secondhand instead of new
7	Searching for an item second hand, before buying it new
8	Selling unworn, reusable clothing

9	Donating unworn clothing at secondhand store
10	Donating unworn clothing at a donation container
11*	Not throwing bad quality/damaged clothing away
12	Checking the quality of clothing before buying
13	Deciding not to buy a piece of clothing because of the bad quality
14	Spending more money to buy good quality clothing
15	Repairing damaged clothing (self)
16	Helping others repair their clothing
17	Letting damaged clothing be repaired by a tailor

These behaviours were originally phrased in a way such that the behaviour would have a negative effect on the environment, instead of a positive. The phrases are made positive to be able to compare them with the other positive behaviours. The answers are switched accordingly.

Number of answers per score

Score (0-5)	Behaviour																
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
0	37	13	90	46	34	25	33	40	17	8	17	2	0	1	13	49	24
1	41	36	5	27	28	20	20	14	9	10	24	4	6	7	17	22	22
2	12	37	2	20	28	21	13	25	21	23	27	14	16	24	31	15	32
3	1	11	1	4	6	15	12	9	16	9	17	30	39	25	17	4	11
4	4	0	0	1	2	16	14	8	25	34	5	24	19	22	9	5	5
5	3	1	0	0	0	1	6	2	10	14	8	24	18	19	11	3	4
Total	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98

Percentage per score (%)

Score (0-5)	Behaviour								
	1	2	3	4	5	6	7	8	9
0	37,7551	13,26531	91,83673	46,93878	34,69388	25,5102	33,67347	40,81633	17,34694
1	41,83673	36,73469	5,102041	27,55102	28,57143	20,40816	20,40816	14,28571	9,183673
2	12,2449	37,7551	2,040816	20,40816	28,57143	21,42857	13,26531	25,5102	21,42857
3	1,020408	11,22449	1,020408	4,081633	6,122449	15,30612	12,2449	9,183673	16,32653
4	4,081633	0	0	1,020408	2,040816	16,32653	14,28571	8,163265	25,5102
5	3,061224	1,020408	0	0	0	1,020408	6,122449	2,040816	10,20408
Total	100	100	100	100	100	100	100	100	100

Score	Behaviour

(0-5)	10	11	12	13	14	15	16	17
0	8,163265	17,34694	2,040816	0	1,020408	13,26531	50	24,49
1	10,20408	24,4898	4,081633	6,122449	7,142857	17,34694	22,44898	22,449
2	23,46939	27,55102	14,28571	16,32653	24,4898	31,63265	15,30612	32,653
3	9,183673	17,34694	30,61224	39,79592	25,5102	17,34694	4,081633	11,224
4	34,69388	5,102041	24,4898	19,38776	22,44898	9,183673	5,102041	5,102
5	14,28571	8,163265	24,4898	18,36735	19,38776	11,22449	3,061224	4,0816
Total	100	100	100	100	100	100	100	100

Average scores (0-5)

	1	2	3	4	5	6	7	8	9	10
Mean	1,010204	1,510204	0,122449	0,846939	1,122449	1,795918	1,714286	1,357143	2,540816	2,94898
Median	1	1,5	0	1	1	2	1	1	3	3
Mode	1	2	0	0	0	0	0	0	4	4
St. dev.	1,188388	0,933289	0,460061	0,956282	1,028113	1,449914	1,655979	1,408736	1,619268	1,522156

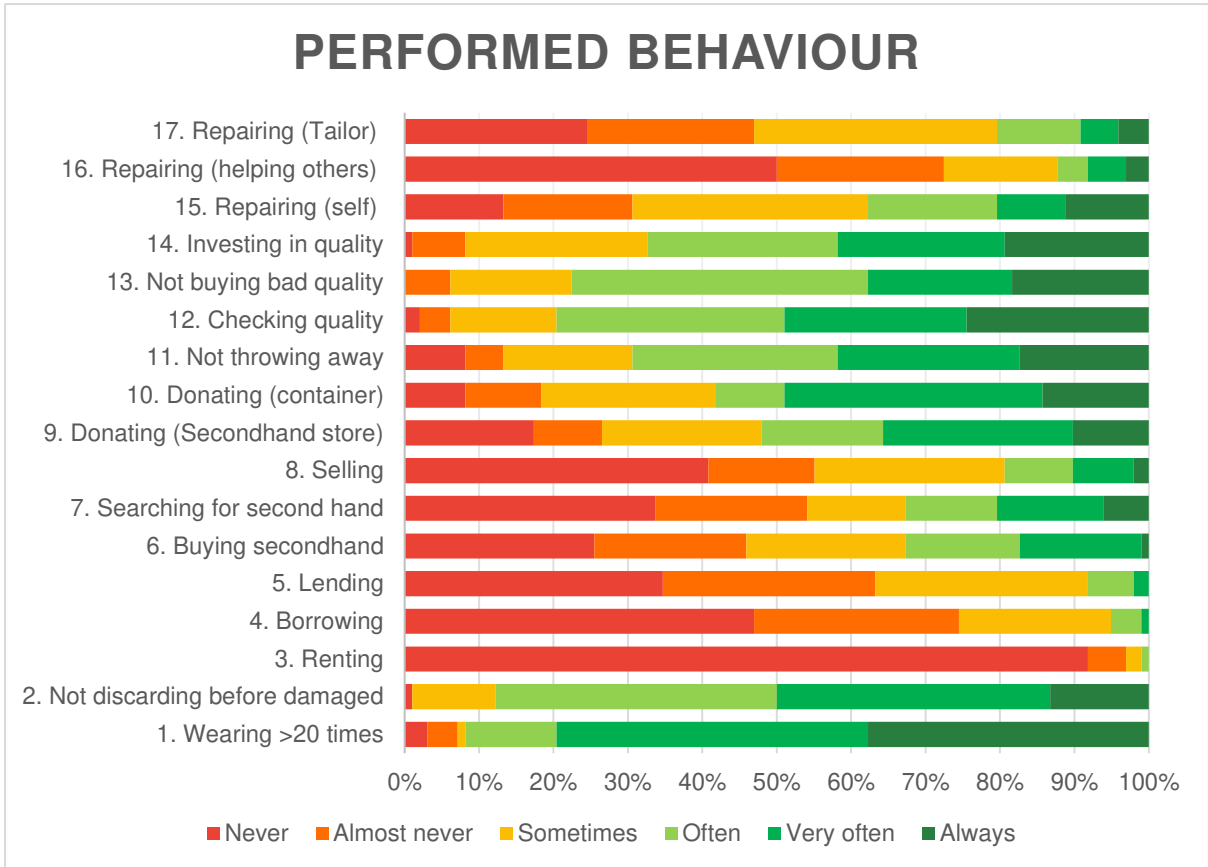|	11	12	13	14	15	16	17
Mean	1,928571	3,44898	3,27551	3,193878	2,255102	1,010204	1,6224
Median	2	3	3	3	2	0,5	2
Mode	2	3	3	3	2	0	2
St. dev.	1,43771	1,236243	1,128639	1,265385	1,487482	1,33544	1,3279

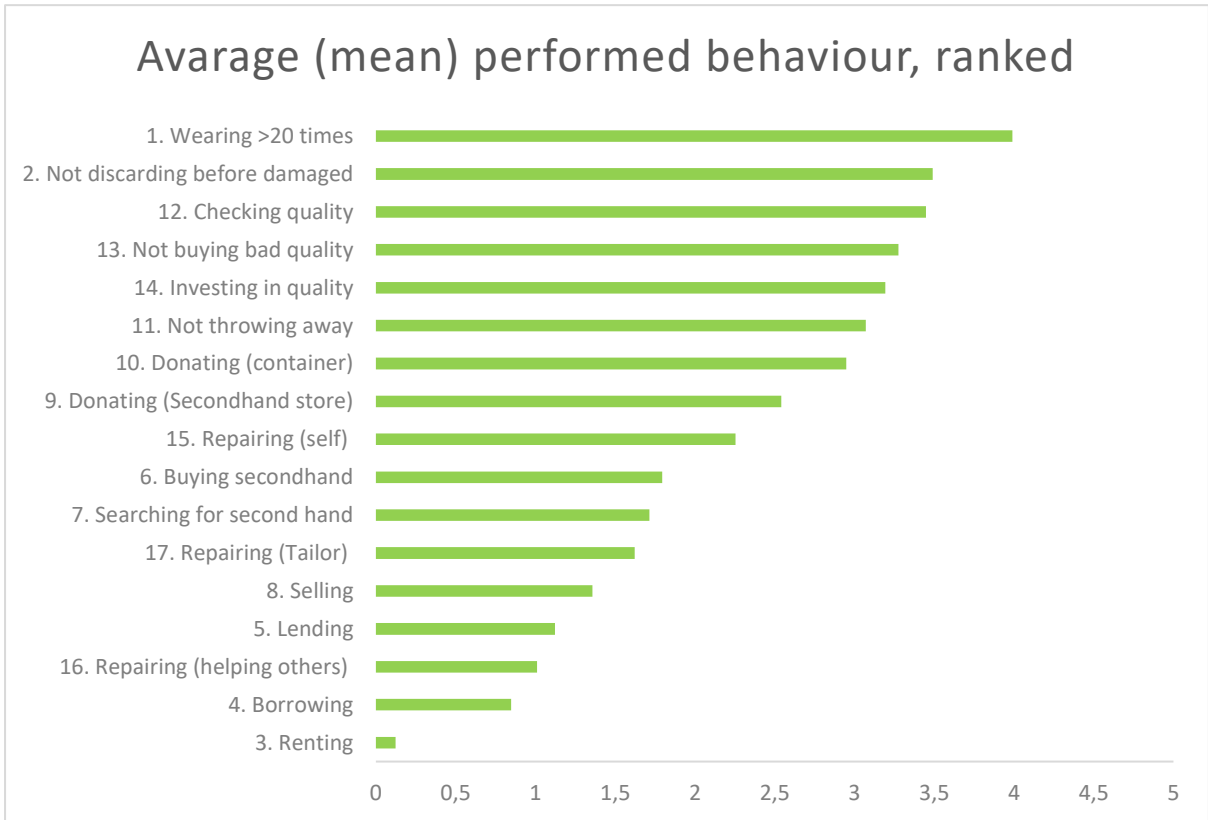Figure 2: Performed behaviour graph

Figure 3: Ranked performed behaviour

4.3 WILLINGNESS

To measure the willingness of the participants to perform certain sustainable behaviours, they were given to question 'On a scale from 1 to 8, how willing are you to perform the following behaviours?', and 15 behaviours to score on this scale. The statements and results are shown below.

Number	Behaviour
1	Buy as few clothes as possible
2	Wearing clothing more often before discarding
3	Renting clothing
4	Borrowing clothing from friends/family
5	Lending clothing to friends/family
6	Buying secondhand clothing instead of new
7	Selling unworn clothing
8	Donating unworn clothing to a secondhand store
9	Donating unworn clothing at a clothing container
10	Donating bad quality/damaged clothing instead of throwing away
11	Checking the quality of clothing before buying
12	Spending more money on better quality (more durable) clothing
13	Repairing damaged clothing (self)
14	Having damaged clothing be repaired by a tailor
15	Helping others repair their clothing

Number of answers per score

Score (1-8)	Behaviour 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1	1	0	44	27	13	12	19	7	2	8	1	1	11	4	26
2	3	3	21	17	12	9	4	0	1	6	1	2	5	11	14
3	4	2	9	11	12	14	8	1	2	5	1	1	6	6	7
4	14	7	9	6	10	8	9	5	3	6	5	7	12	9	8
5	7	10	3	6	4	1	11	6	6	11	5	8	15	12	8
6	17	21	6	12	16	11	19	10	13	7	13	17	16	12	14
7	32	23	2	11	14	13	7	16	18	14	26	18	13	20	9
8	20	32	4	8	17	30	21	53	53	41	46	44	20	24	12
Total	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98

Percentage per score (%)

Score (1-8)	Behaviour 1	2	3	4	5	6	7	8
1	1,020408	0	44,89796	27,55102	13,26531	12,2449	19,38776	7,142857
2	3,061224	3,061224	21,42857	17,34694	12,2449	9,183673	4,081633	0
3	4,081633	2,040816	9,183673	11,22449	12,2449	14,28571	8,163265	1,020408
4	14,28571	7,142857	9,183673	6,122449	10,20408	8,163265	9,183673	5,102041
5	7,142857	10,20408	3,061224	6,122449	4,081633	1,020408	11,22449	6,122449
6	17,34694	21,42857	6,122449	12,2449	16,32653	11,22449	19,38776	10,20408
7	32,65306	23,46939	2,040816	11,22449	14,28571	13,26531	7,142857	16,32653
8	20,40816	32,65306	4,081633	8,163265	17,34694	30,61224	21,42857	54,08163
Total	100	100	100	100	100	100	100	100

Score (1-8)	Behaviour 9	10	11	12	13	14	15
1	2,040816	8,163265	1,020408	1,020408	11,22449	4,081633	26,53061
2	1,020408	6,122449	1,020408	2,040816	5,102041	11,22449	14,28571
3	2,040816	5,102041	1,020408	1,020408	6,122449	6,122449	7,142857
4	3,061224	6,122449	5,102041	7,142857	12,2449	9,183673	8,163265
5	6,122449	11,22449	5,102041	8,163265	15,30612	12,2449	8,163265
6	13,26531	7,142857	13,26531	17,34694	16,32653	12,2449	14,28571
7	18,36735	14,28571	26,53061	18,36735	13,26531	20,40816	9,183673
8	54,08163	41,83673	46,93878	44,89796	20,40816	24,4898	12,2449
Total	100	100	100	100	100	100	100

Average score (1-8)

	1	2	3	4	5	6	7	8
Mean	6,081633	6,459184	2,510204	3,683673	4,72449	5,163265	4,826531	6,693878
Median	7	7	2	3	5	6	5	8
Mode	7	8	1	1	8	8	8	8
St. Dev.	1,709123	1,554298	1,980549	2,472934	2,469528	2,62303	2,516033	2,007245

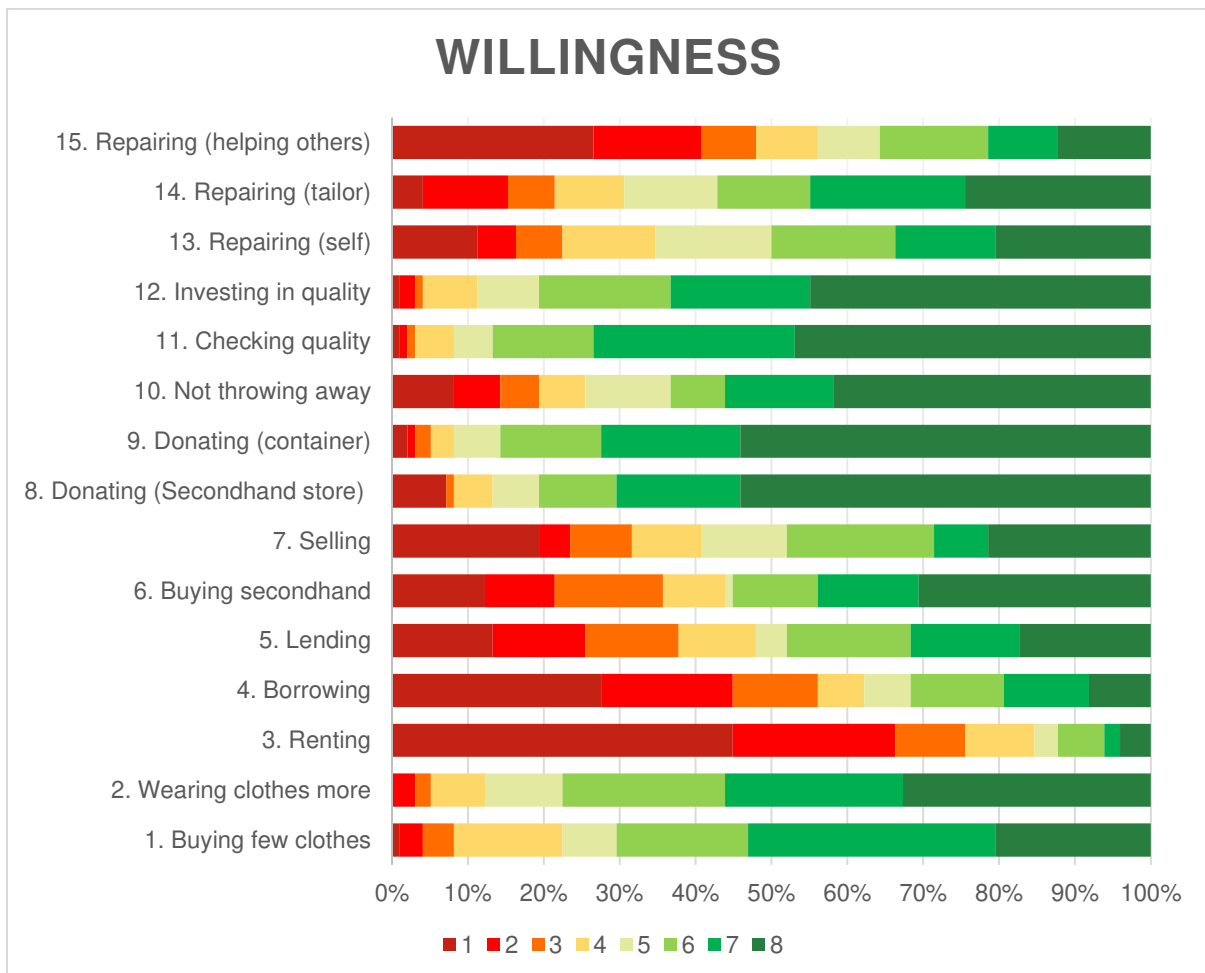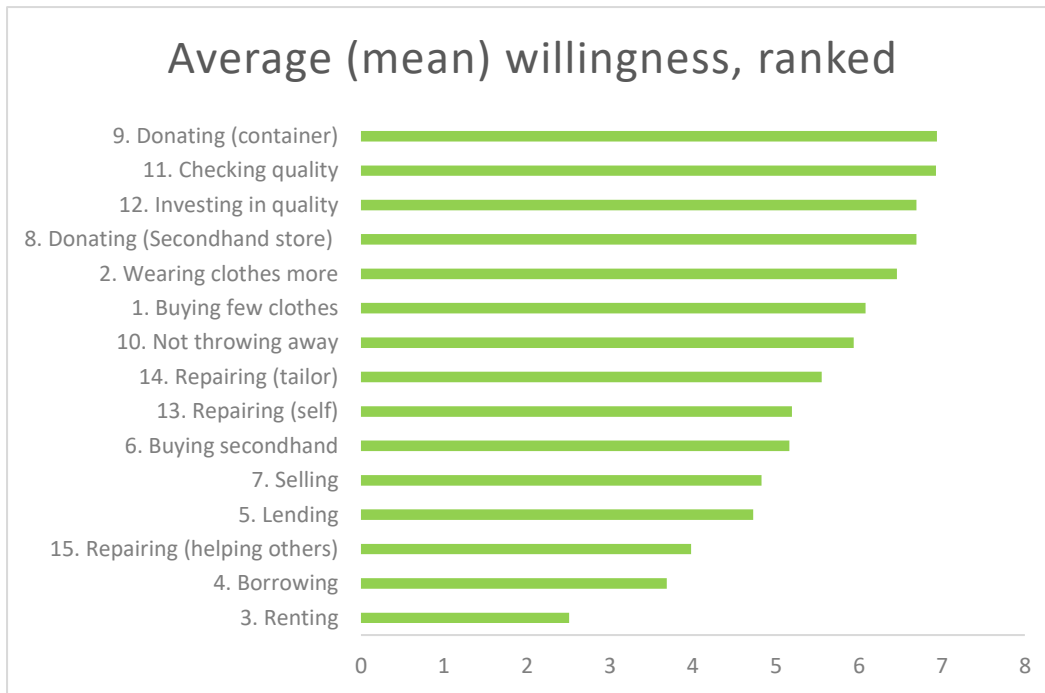|	9	10	11	12	13	14	15
Mean	6,938776	5,938776	6,928571	6,693878	5,193878	5,55102	3,979592
Median	8	7	7	7	5,5	6	4
Mode	8	8	8	8	8	8	1
St. Dev.	1,591319	2,389049	1,43771	1,601598	2,27337	2,211136	2,556494

Figure 4: Willingness graph

Figure 5: Willingness ranked

4.4 CHANGE POTENTIAL

Compared Performed behaviour and Willingness
Since the Performed Behaviours and the Willingness behaviours are asked on different scales (0-5
and 1-8 respectively), the means need to be normalized to be able to compare them. The following
table shows the Performed Behaviours and Willingness behaviours which are compared, together
with their normalized means, and the Change Potential.

	Performed behaviour	Normalized mean	Willingness	Normalized mean	CP
1*	2. Not discarding before damaged	0,69795918	2. Wearing clothes more before discarding	0,77988338	0,081924
2	3. Renting	0,0244898	3. Renting	0,21574344	0,191254
3	4. Borrowing	0,16938776	4. Borrowing	0,38338192	0,213994
4	5. Lending	0,2244898	5. Lending	0,53206997	0,30758
5	6. Buying secondhand	0,35918367	6. Buying secondhand	0,59475219	0,235569
6	8. Selling	0,27142857	7. Selling	0,54664723	0,275219
7	9. Donating (Secondhand store)	0,50816327	8. Donating (Secondhand store)	0,81341108	0,305248
8	10. Donating (container)	0,58979592	9. Donating (container)	0,8483965	0,258601
9	11. Not throwing away	0,61428571	10. Not throwing away	0,70553936	0,091254

10	12. Checking quality	0,68979592	11. Checking quality	0,84693878	0,157143
11	14. Buying more expensive	0,63877551	12. Investing in quality	0,81341108	0,174636
12	15. Repairing (self)	0,45102041	13. Repairing (self)	0,59912536	0,148105
13	16. Repairing (helping others)	0,20204082	15. Repairing (helping others)	0,42565598	0,223615
14	17. Repairing (Tailor)	0,3244898	14. Repairing (tailor)	0,65014577	0,325656

Not discarding clothes before they are damaged is the desired behaviour when talking about the behaviour 'Wearing clothes more often before discarding them', which is why these behaviours are compared. It is therefore assumed that people who are willing to wear their clothing more often before discarding, are willing to wear them until they are damaged. The CP for this behaviour might therefore be larger than reality.
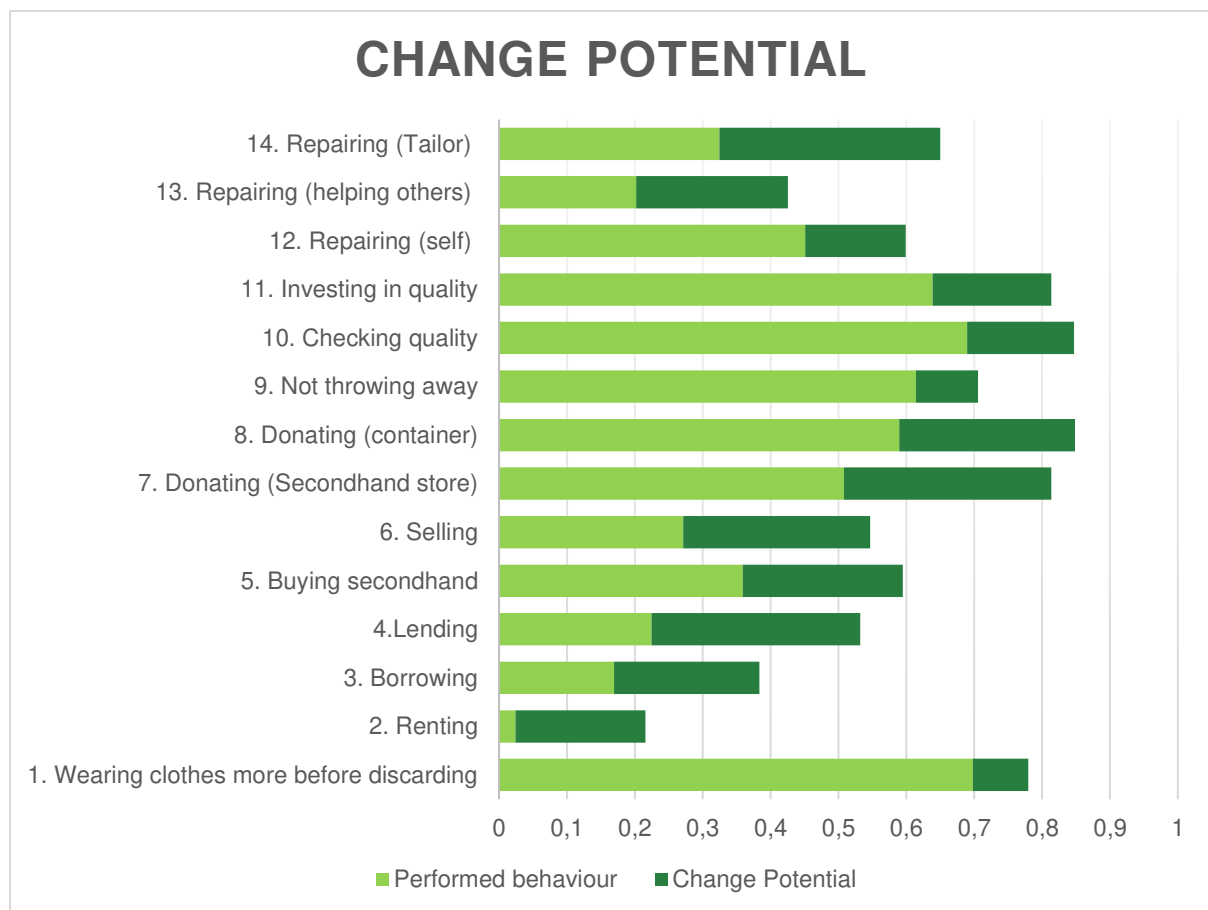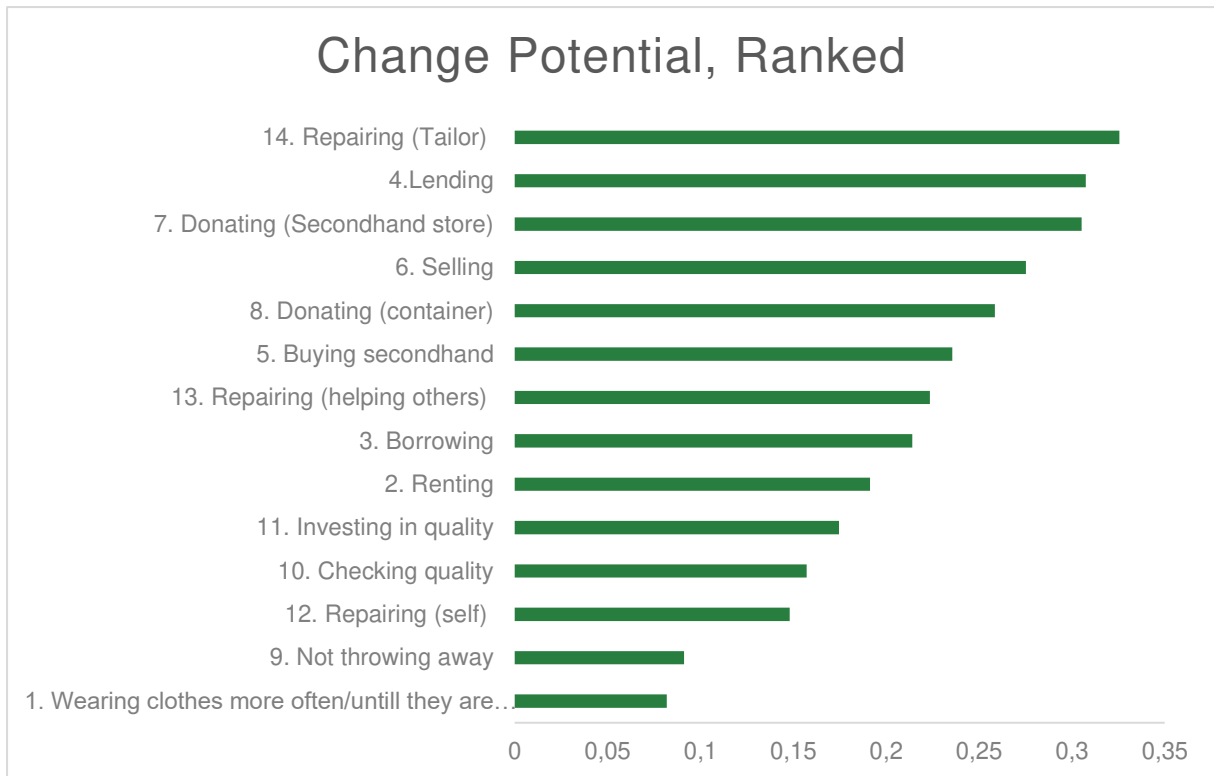

Figure 6: Change potential graph

Figure 7: Change potential ranked

CP Compared to literature data

The PBL (Netherlands Environmental Assessment Agency) (Koch, 2023) also has done research to the Change Potential of sustainable behaviours. They have analysed the Performed Behaviours by defining specific behaviours and asking the participant to answer whether they have performed this (Yes/No). Idem with the willingness, by asking if they are willing to perform a specific behaviour (Yes/No). Each question was answered by 303 to 4441 participants. The results of this research are shown below.

	Description Performed Behaviour	N	Percentage answered 'Yes'	Description Willingness	N	Percentage answered 'Yes'
Renting Clothing	Rented clothing instead of buying in the past year	1435	0,6	Willing to rent clothing instead of buying	1441	4
Lending clothing	Having lend clothing to acquaintance in the past year	1435	6	Willing to lend clothing to acquaintance	1441	27
Not throwing away	Most recent piece of damaged clothing was donated instead of thrown away	689	68	Willingness to donate damaged, unrepairable clothing	1441	89
Buying second hand	Most recently bought piece of	1334	3	Willingness to buy second	1441	26

	clothing was second hand			hand instead of new		
Buying few pieces of clothing	Purchased less than 5 pieces of clothing in the last 12 months	1441	25	Willingness to purchase less clothing	1441	66
Buying sustainable materials	Most recent purchased clothing is made from sustainable material (linen, hemp, kenaf, jute, lyocell/Tencel), or ecological materials	1224	14	Willing to buy clothing made from sustainable materials	1441	57
Selling/donating	Most recent reusable piece of clothing which was discarded was sold or donated for reuse	303	37	Willingness to donate or sell unused but reusable clothing for reuse	1441	82
Buying recycled materials	Most recent bought piece of clothing was made from recycled materials	1335	6	Willingness to purchase clothing made from recycled materials	1441	67
Buying good quality clothing	Most recent discarded piece of clothing was at least 6 years old	703	30	Not asked, assumed that everyone is willing to do this, if costs the same effort and money	-	100
Repairing damaged clothing	Not asked, because the last decision made may be hard to remember	-	-	Willingness to repair clothing or have it be repaired, if this is cheaper than buying new	1441	48

	Normalized performed behaviour	Normalized CP
Renting Clothing	0,006	0,034
Lending clothing	0,06	0,21
Not throwing away	0,68	0,21
Buying second hand	0,03	0,23
Buying few pieces of clothing	0,25	0,41
Buying sustainable materials	0,14	0,43
Selling/donating	0,37	0,45
Buying recycled materials	0,06	0,61
Buying good quality clothing	0,3	0,7
Repairing damaged clothing	-	-
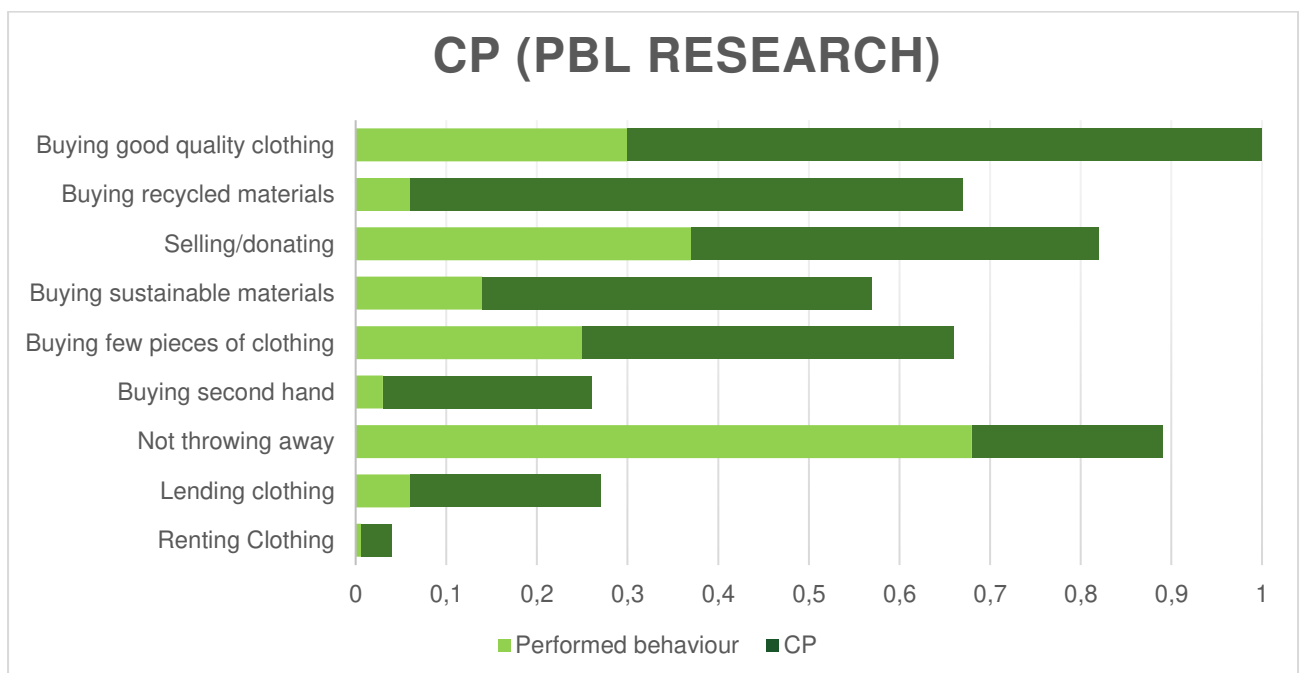
Figure 8: CP data from PBL

The differences in data between this research and PBL's research are discussed below.

Renting clothing instead of buying
Renting is the behaviour with the lowest willingness and least potential in the PBL research, a lot less then what resulted from this project. The reason for this is not clear, but since renting is the behaviour with the lowest willingness in both the PBL research and this research, it can be assumed that this is accurate.

Lending clothing to acquaintances

Lending has a lower performed behaviour and Change potential in the PBL research. The cause for this is not clear.

Not throwing away damaged clothing
The performance of this behaviour is comparable with the results of this project, but a higher willingness is measured. Which means that the change potential for this behaviour might be higher than wat is measured in this research.

Buying second-hand instead of new
The performed behaviour is a lot lower in this research. This can be explained by the fact that the PBL research only asked participants about their most recent purchase, which causes participants who regularly buy second-hand, but whose most recent clothing purchase was new, to be left out. Therefore, the results of this project are assumed to be more accurate

Buying less clothing
Since this CP cannot be calculated with the data of this survey (the performed behaviour is not asked), the change potential calculated by PBL will be used for this project.

Source	Behaviour	Performed behaviour	N	Norma lized score	Willingness	N	Normalized score	Cp
PBL	Buying few pieces of clothing	Purchased less than 5 pieces of clothing in the last 12 months (excl. Shoes, underwear, socks, accessories)	1441	0,25	Willingness to purchase less clothing	144 1	0,66	41
This survey	Buying less clothing	-	-	-	Willingness to buy as few clothes as possible	98	0,73	-

PBL has defined the desired behaviour as 'Buying less than 5 pieces of clothing (excluding shoes, underwear, socks, accessories) per year', and asked participants whether they have performed this behaviour in the last 12 month (Yes/No). For 'willingness' they asked participants whether they are willing to purchase less clothing (Yes/No).

The score for the willingness to perform this behaviour can actually be used as the CP in this case, since this is the percentage of people who are willing to purchase less clothing than they currently do.

Normally, the people who already perform the behaviour need to be subtracted from the amount of people who are willing to perform the behaviour, to end up with the people who are willing to perform a behaviour but are not yet doing it (the CP). In this case, the way in which this question is asked causes the willingness to already be compared to the current behaviour. The score of 0,66 (66% of the participants) can therefore be used as the Change Potential for this behaviour.

Buying clothing made form sustainable materials.
To calculate the performed behaviour, the PBL research only asked participants about their most recent purchase, which means that people who regularly buy clothing made from sustainable materials, but whose most recent purchase was not sustainable, are left out. Therefore, this CP is assumed to be unreliable.

The willingness of the behaviours 'buying recycled materials' and 'buying sustainable materials' are lower in the PBL research compared to this research which means that the CP might be lower than what was found in this research. The CP found with the second survey will be used during this project.

Selling/donating unworn reusable clothing
Donating and selling clothing are asked as one behaviour in the PBL research, and three separate behaviours in this research (selling, donating at a second-hand store, donating at a container). The average CP of these three behaviours is half the CP of Selling/donating in the PBL research. The reason for this is unknown. The results of this research will still be used.

Buying clothing made from recycled materials
See 'Buying clothing made from sustainable materials'.

Buying good quality clothing
The CP of this behaviour is very large in the PBL research. This can be explained by the fact that they assumed the willingness to be 100%, when it would not take more effort and not cost more than buying low quality clothing. The performed behaviour is defined as '*Most recent discarded piece of clothing was at least 6 years old'*, which means they define quality clothing as clothing which lasts at least 6 years. This length was not defined in the survey for this project, which could also explain the difference.

This research asked the participants for their willingness to spend more money on better quality clothing, since these are often more expensive. 'Checking the quality of clothing' and 'spending more money on good quality clothing' are amongst the highest performed behaviours, but lowest CPs in this project.

It can be said that most people who are willing to invest in good quality clothing, already do so. However, when good quality clothing becomes more affordable and/or easier to obtain, this behaviour will probably be increased.

4.5 CP AND PEG

The change potential is now calculated. However, to be able to choose a behaviour to focus on we can also look at the Potential environmental gain (PEG). It is outside the scope of this project to calculate the exact PEG's, which is why the estimations of the PBL (Netherlands Environmental Assessment Agency) (Koch, 2021) are used. PBL has made these estimations based on the Environmental Analysis Program (EAP), and their own calculations/estimations.

The table below shows the PEG per behaviour as defined by PBL. Each of these behaviours is given a 'source number'. The next table shows which source number is used for which behaviour in this project, and the assigned PEG.

PEG source

Source number	Behaviour	Emissions (1-5)	Land use (1-5)	PEG (1-5)
1	Buying less clothing	3	5	4
2	Renting clothing via a platform or shop	1	1	1
3	Lending clothes to friends/family	1	1	1
4	Buying clothes made from sustainable material	2	1	1,5
5	Buying second hand	2	3	2,5
6	Buying good quality clothing	2	3	2,5
7	Selling/donating for reuse	1	2	1,5
8	Repairing clothing	2	2	2
9	Buying clothes made from recycled materials	2	5	3,5
10	Donating damaged clothes for recycling	1	1	1

(Koch, 2023)

| Behaviour	CP (0-1)	PEG (1-5)	PEG Source number
1. Wearing clothes more before discarding	0,081924	4	1
2. Renting	0,191254	1	2
3. Borrowing	0,213994	1	3
4.Lending	0,30758	1	3
5. Buying secondhand	0,235569	2,5	5
6. Selling	0,275219	1,5	7
7. Donating (Secondhand store)	0,305248	1,5	7
8. Donating (container)	0,258601	1,5	7
9. Not throwing away	0,091254	1	10
10. Checking quality	0,157143	2,5	6
11. Investing in quality	0,174636	2,5	6
12. Repairing (self)	0,148105	2	8
13. Repairing (helping others)	0,223615	2	8
14. Repairing (Tailor)	0,325656	2	8
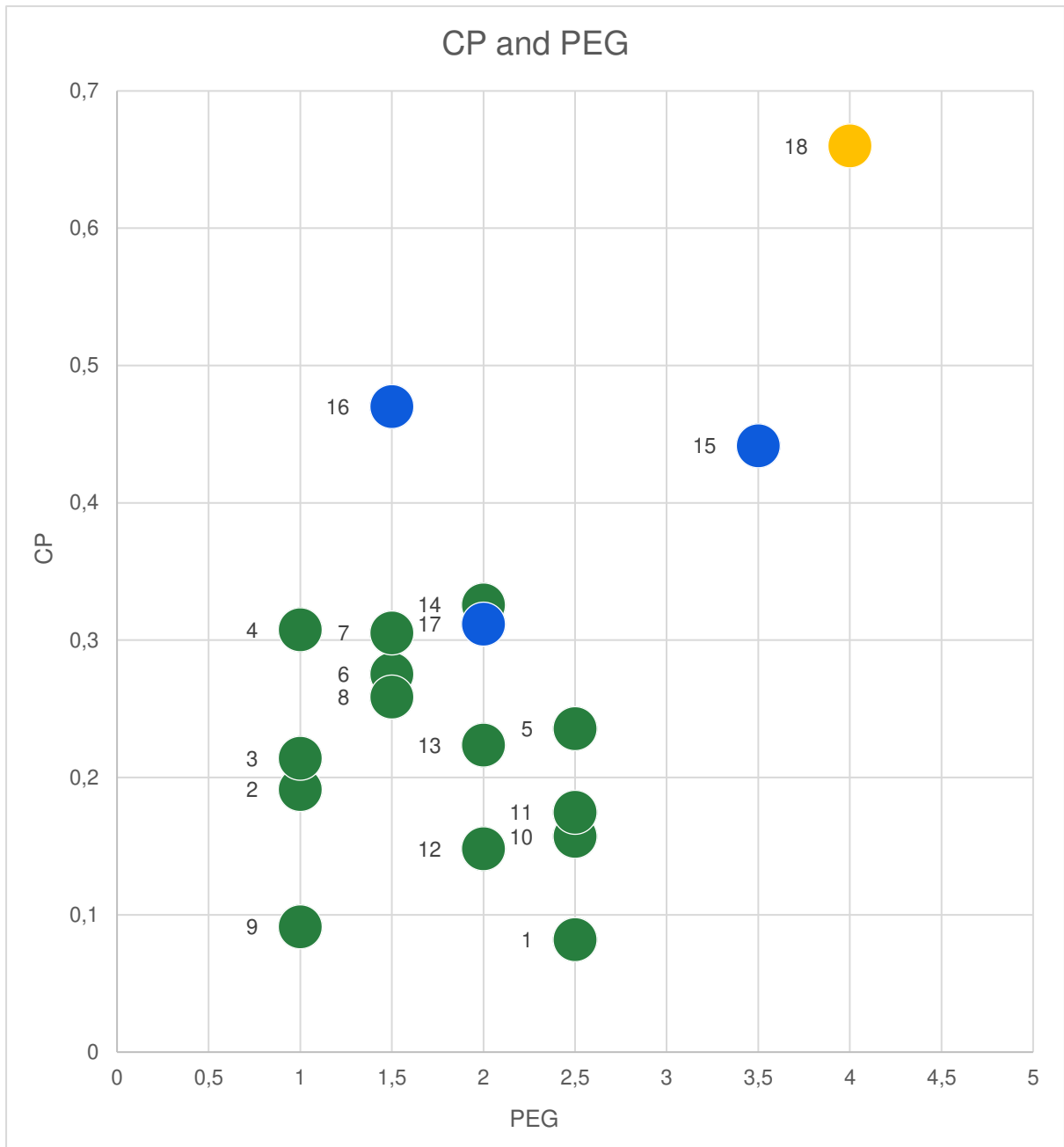
Figure 9: CP and PEG graph

4.6 QUALITATIVE QUESTIONS CODING

For each behaviour, the question 'What would motivate you to perform this behaviour (more)' was asked as an open question. The answers were coded and sorted under the COM-B sections. The following tables show how often a barrier was mentioned, and under what COM-B section it was sorted. Positive remarks (E.g., 'I am already performing this behaviour', and ideas for solution which were mentioned by the respondents can be found in the last column of each table.

The coded answers which were mentioned most often are marked with dark (mentioned 10 times or more) or light (mentioned 3 times or more) grey.

Buying less clothing

Code	Lack of..			
	Capability	Motivation	Opportunity	Positive/ideas
I already buy the minimum amount				20
I could buy less				2
This is a personal change in mindset		1		
Clothing needs to be better quality			12	
Good quality clothing needs to be cheaper			1	
There need to be less social expectations			3	
Buying less is cheaper				2
You need to think more critical about what to buy		1		
You need to be more creative with what you have	1			
Buying less should be rewarded		1		
Trading clothes instead			1	
There need to be less fashion trends			6	
Following your own style instead of fashion		2		

39

Code	Capability	Motivation	Opportunity	Positive/ideas
Information about climate effects	4			
True pricing	1			
Taking better care of clothes				2
Less clothing advertisement	4			
Buying second hand instead				3
Use a capsule wardrobe				1
I like buying clothes too much		3		
Being aware of owned clothing	3			
Buying less clothing online				2
Going shopping less often				1
More availability for repair			1	
Less fluctuation in body weight			1	
Buying better combinable clothing				1
You get tired of your clothing/want something new		2		
I want to have many options		1		
Total	**12**	**11**	**25**	**34**

Buying better quality

Code	Lack of..			
	Capability	Motivation	Opportunity	Positive/ideas
I do this already				15
I know what to look for when searching for quality				1
I estimate the quality by feeling				1

	Col1	Col2	Col3	Col4
I do this when the price is acceptable			1	
I have to buy good quality because of my measurements				1
I could do this more				1
It is (too) expensive			17	
Buying good quality saves money				2
Don't produce bad quality clothing			4	
More good quality clothing available/easy to find			6	
I need to find good alternatives			1	
Quality of clothing is worse than it used to be			1	
price/quality balance needs to be right			4	
More advertising about quality		1		
Make bad quality clothes more expensive		2		
I buy good quality second hand				4
More good quality second hand stores			1	
More expensive does not mean better quality	6			
I need a way to see what good quality is	14			
Teach awareness	5			
I need certainty that an item will last longer	2			
I need to take more care when buying clothing	1			

No more impulse buys	1			
More standardized sizes in shops			1	
Clothing needs to be appreciated more		1		
Quality is hard to see online			1	
More transparency about the production process	1			
It feels better to wear good quality				3
Total	30	4	37	28

Buying second hand

Code	Lack of..			
	Capability	Motivation	Opportunity	Positive/ideas
I do not want to do this		8		
I find it hard to change this behaviour		2		
I leave second hand clothing for people who can't afford new	1			
I do this already				16
I am open to do this				2
This takes time			2	
It's hard to find something I like			1	
Second hand stores need to be more attractive (like new stores)			5	
The quality is bad / needs to be checked better			5	
It needs to be affordable (not expensive vintage)			4	

Code	Capability	Motivation	Opportunity	Positive/ideas
Unhygienic/ it needs to be clean			6	
There needs to be more availability			9	
Stores need to be arranged logically			2	
It needs to be easier to find			3	
I buy second hand online				4
I find it difficult to buy online	1			
It needs to be attractive for younger generations		1		
More promotion/awareness	3			
Improving the image of second hand stores		2		
It is hard to find something my size			7	
There are many options in Leeuwarden				1
Normal clothing stores should have a second hand section			2	
Thrifting is fun				1
It is hard to find men's clothing second hand			1	
Total	5	13	47	24

Donating/selling clothing

Code	Lack of..			
	Capability	Motivation	Opportunity	Positive/ideas
I do this already				24
I throw away damaged clothes	6			

	Capability	Motivation	Opportunity	Positive/ideas
I did not know you can donate damaged clothing	9			
Teach people what / how to donate	9			
Selling takes effort		3		
Make donating easier/ more available			15	
Do not ship donated clothing outside of Europe		1		
Transparency about where it ends up	3			
Total	**27**	**4**	**15**	**24**

Renting clothing

Code	Lack of..			
	Capability	Motivation	Opportunity	Positive/ideas
I do not want to do this		18		
I have no experience with this	3			
I do not know what for	4			
I am open to this				3
Only for special occasion clothing				16
I do this already				2
It is too expensive (compared to buying)			4	
It needs to be good quality			1	
My taste needs to be available			1	
More awareness about the possibility	8			
It needs to be more available			8	

It needs to be easy			1	
Total	**15**	**18**	**15**	

Lending clothing

Code	Lack of..			
	Capability	Motivation	Opportunity	Positive/ideas
I do not want to do this		7		
My friends never ask this			1	
I do this already				8
I do this almost never				2
I am open to this				12
I would rather swap/give away				3
Stimulate swapping		3		
Make it a talking topic amongst acquaintances			3	
Remove the stigma			2	
You need to have the same size			**4**	
Education	**1**			
Sharing gives you more choice in clothing				1
Total	**1**	**10**	**10**	**26**

Borrowing clothing

Code	Lack of..			
	Capability	Motivation	Opportunity	Positive/ideas
I don't want to do this		15		
I do this already				4
I am open to this				4
External party cannot influence this		2		
You need to have the same size			5	
You need to have the same style			1	
There has to be more awareness	1			
Permanently giving or swapping is preferred				4
Make it a talking topic			1	
Total	**1**	**17**	**7**	**12**

Repairing clothing

Code	Lack of..			
	Capability	Motivation	Opportunity	Positive/ideas
I do this myself				24
Someone does this for me				2
I let this be done by a tailor				3
I am open to do this				3
It needs to be more accessible/more available			10	
It needs to be cheaper then buying new			17	

It needs to be promoted as a good/affordable alternative to buying new	6			
I need to learn the skills needed to repair clothing	5			
Some clothing is hard to repair		3		
It is difficult to obtain the right materials			1	
Clothing needs to be better quality			1	
There needs to be a warranty on clothing			1	
Total	11	3	30	32

4.7 BUYING SUSTAINABLE OR RECYCLED MATERIALS

Demographics

Category	Amount	Percentage (%)
All respondents	11	100
Gender;		
Men	1	9,09
Women	10	90,90
Other gender	0	0
Age:		
16-25	1	9,09
26-40	3	27,27
41-60	3	27,27
60+	4	36,36
Education: *		
Lower	0	0
Middle	2	18,18
Higher	9	81,81
Living in Friesland?		
Yes	8	72,72
No**	3	27,27

*Lower; Preschool, PRO/VMBO, Middle; HAVO/VWO, MBO. Higher; HBO/WO bachelor, HBO/WO master, PhD
**Provinces; Overijssel (8), Groningen (5), Noord-Holland (2), Gelderland (1), Drenthe (1), Utrecht (1), Zuid-Holland (1)
*** Smallingerland (4), Súdwest-Fryslân (4), De Friese Meren (3), Tietjerksteradeel (3), Waadhoeke (2), Weststellingwerf (2), Noardeast-Fryslân (1), Ooststellingwerf (1), Achtkarspelen (1).

Sustainability

	Do you think you live your life sustainably? (1-10)	How often do you take sustainability into account during daily life? (1-10)
1	0	0
2	0	0
3	1	1
4	0	1
5	0	0
6	1	2
7	5	2
8	4	3
9	0	2
10	0	0
Mean	6,909090909	6,818181818
Median	7	7
St. Dev.	1,445997611	1,940009372

Performed behaviour

Number	Behaviour
18	Buying clothes made from recycled materials
19	Buying clothing made from sustainable materials (Hemp, linen, bamboo, kenaf, jute, Lyocell/Tencel
20	Buying clothing made out of 1 material (e.g., 100% cotton)

Amount

Score	18	19	20
0	2	0	0
1	1	3	1
2	5	6	3
3	3	1	5
4	0	1	2
5	0	0	0

Percentage

Score	18	19	20
0	18,18181818	0	0
1	9,090909091	27,27272727	9,090909091
2	45,45454545	54,54545455	27,27272727
3	27,27272727	9,090909091	45,45454545
4	0	9,090909091	18,18181818
5	0	0	0

Average

	18	19	20
Mean	1,818181818	2	2,727272727
Median	2	2	3
St. Dev	1,07871978	0,894427191	0,904534034

Willingness

Number	Behaviour
16	Buying clothes made from recycled materials
17	Buying clothing made from sustainable materials (Hemp, linen, bamboo, kenaf, jute, Lyocell/Tencel
18	Buying clothing made out of 1 material (e.g., 100% cotton)

Amount

Score	16	17	18
0	0	0	0
1	0	0	0
2	0	0	0
3	1	1	1
4	1	0	0
5	0	0	0
6	1	0	1
7	4	5	4
8	4	5	5

Percentage

Score	16	17	18
0	0	0	0
1	0	0	0
2	0	0	0
3	9,090909091	9,090909091	9,090909091

4	9,090909091	0	0
5	0	0	0
6	9,090909091	0	9,090909091
7	36,36363636	45,45454545	36,36363636
8	36,36363636	45,45454545	45,45454545

.

Average

	16	17	18
Mean	6,636363636	7,090909091	7
Median	7	7	7
St. Dev	1,689540013	1,445997611	1,483239697

Change potential

|	Performed behaviour	Normalized mean	Willingness	Normalized mean	CP
15	18. Buying clothes made from recycled materials	0,363636364	16. Buying clothes made from recycled materials	0,805194805	0,441558442
16	19. Buying clothing made from sustainable materials (Hemp, linen, bamboo, kenaf, jute, Lyocell/Tencel	0,4	17. Buying clothing made from sustainable materials (Hemp, linen, bamboo, kenaf, jute, Lyocell/Tencel	0,87012987	0,47012987
17	20. Buying clothing made out of 1 (mono) material (e.g. 100% cotton)	0,545454545	18. Buying clothing made out of 1 (mono) material (e.g., 100% cotton)	0,857142857	0,311688312
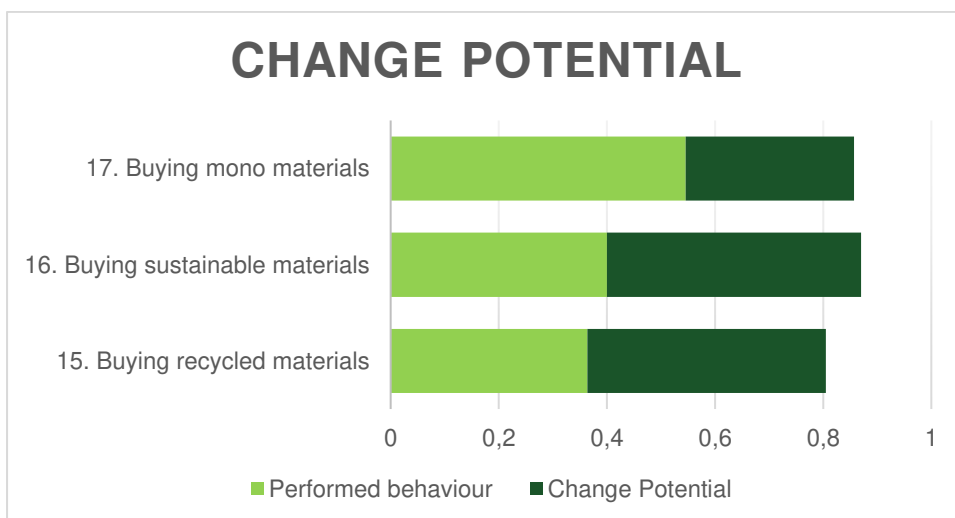
Figure 10: Change potential second survey

PEG

Source number	Behaviour	Emissions (1-5)	Land use (1-5)	PEG (1-5)
1	Buying less clothing	3	5	
2	Renting clothing via a platform or shop	1	1	1
3	Lending clothes to friends/family	1	1	1
4	Buying clothes made from sustainable material	2	1	1,5
5	Buying second hand	2	3	2,5
6	Buying good quality clothing	2	3	2,5
7	Selling/donating for reuse	1	2	1,5
8	Repairing clothing	2	2	2
9	Buying clothes made from recycled materials	2	5	3,5
10	Donating damaged clothes for recycling	1	1	1

Behaviour	CP (0-1)	PEG (1-5)	PEG Source number
15. Buying clothes made from recycled materials	0,441558442	3,5	9
16. Buying clothes made from sustainable materials	0,47012987	1,5	4
17. Buying clothes made from 1 (mono) material	0,311688312	2	Assumption based on 9 and 10*

*It is assumed that this type of clothing will be recycled more often when handed in, and therefor add to the availability of clothing made from recycled material. However, not all mono clothing will be recycled, which results in the lower assumption.

CP and PEG
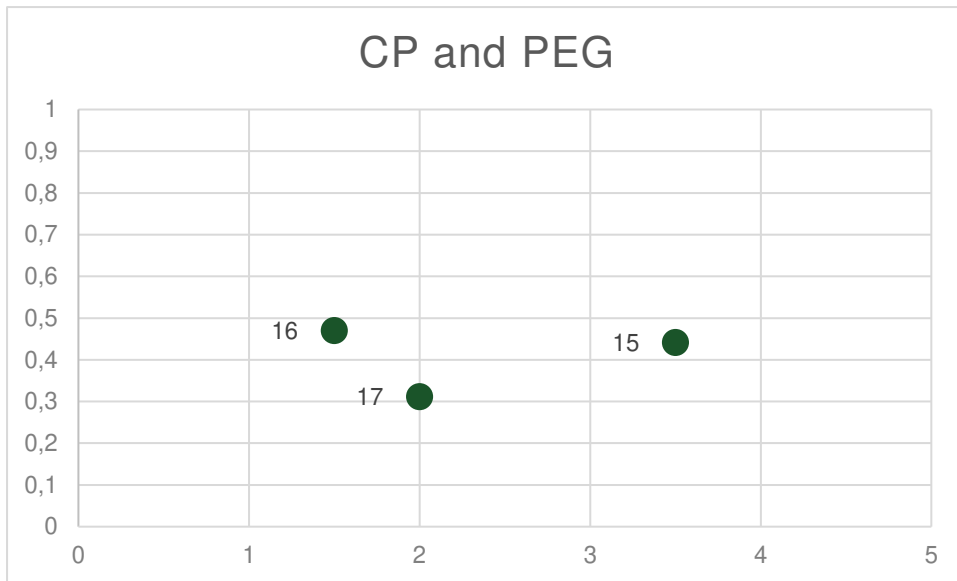
Quantitative data

Buying clothing made from recycled materials

Code	Lack of..			
	Capability	Motivation	Opportunity	Positive/ideas
It needs to be more available			6	
There needs to be more marketing/information about the benefits	2			
It needs to be clearer what is made from recycled materials	1			
True pricing for clothing made from raw materials		1		
It needs to be comfortable		1		
It needs to be affordable			1	
It needs to be trendy		1		
Total	3	3	7	0

Buying clothing made from sustainable materials

Code	Lack of..			
	Capability	Motivation	Opportunity	Positive/ideas
Transparency / make clear what is sustainable	4			
More availability			5	
More information/marketing about sustainable materials	1			
Less unsustainable materials available			1	
True pricing for unsustainable material		1		
It needs to be affordable			1	
It should not wrinkle		1		
It needs to be trendy		1		
Total	5	3	7	

Buying clothing made from 1 (mono) material

Code	Lack of..			
	Capability	Motivation	Opportunity	Positive/ideas
It needs to be comfortable		2		
It needs to be more available			5	
It needs to be clear/transparent	1			
I do this already				1
It needs to be durable		1		
I am open to this				1
Total	1	3	5	1

Knowledge

Participants were asked to read the following text (translated from the original Dutch text):

Currently, only part of all clothing donated for recycling is recycled. This is partly because clothing made from mixed materials (e.g. 80% polyester, 20% cotton) is hard to recycle.

New separation techniques are being developed to make this possible, but until these are developed, buying clothing made from one material helps to increase the amount of recyclable clothing. Purchasing clothing made from recycled materials helps, because this motivates shops and producers to produce more of this kind of clothing.

Finally, buying clothing made from sustainable materials helps, because these have a lower impact then, for example, cotton (this uses a lot of water), and polyester (this pollutes our water with microplastics. Fabrics with a lower impact are made of e.g., hemp, linen, bamboo, kenaf, jute, or lyocell/Tencel.

They were then asked about their previous knowledge about this subject:

Did you know this?	Amount	Percentage
I already knew this	2	18,2
I knew part of this	7	63,6
I did not know this	2	18,2
Total	100	100

Then they were asked what they wanted to do after they received this knowledge:

	Amount	Percentage
Nothing	1	9,1
Buying more clothes made from recycled materials	7	63,6
Buying more clothes made from 1 (mono) material	7	63,6
Buying more clothes made from sustainable materials	5	45,5
I keep buying second hand	1	9,1
Total	11	100

4.8 DEMOGRAPHICS DIFFERENCES

Some differences between various demographics were found during the analyses of the results. See appendix 4 for the full analysis. A summary of the results will be given in this section.

Men vs Women

The largest differences in performed behaviour between men and women can be seen for 'Buying second-hand', 'Selling/donating unworn clothing', and 'Self repairing clothing', which are all done more often by women. Men, however, often use clothing longer, and like to invest a little more in quality. Women have a greater change potential when it comes to self-repairing, investing in quality, buying second-hand, lending/borrowing, renting, and wearing clothes more before discarding
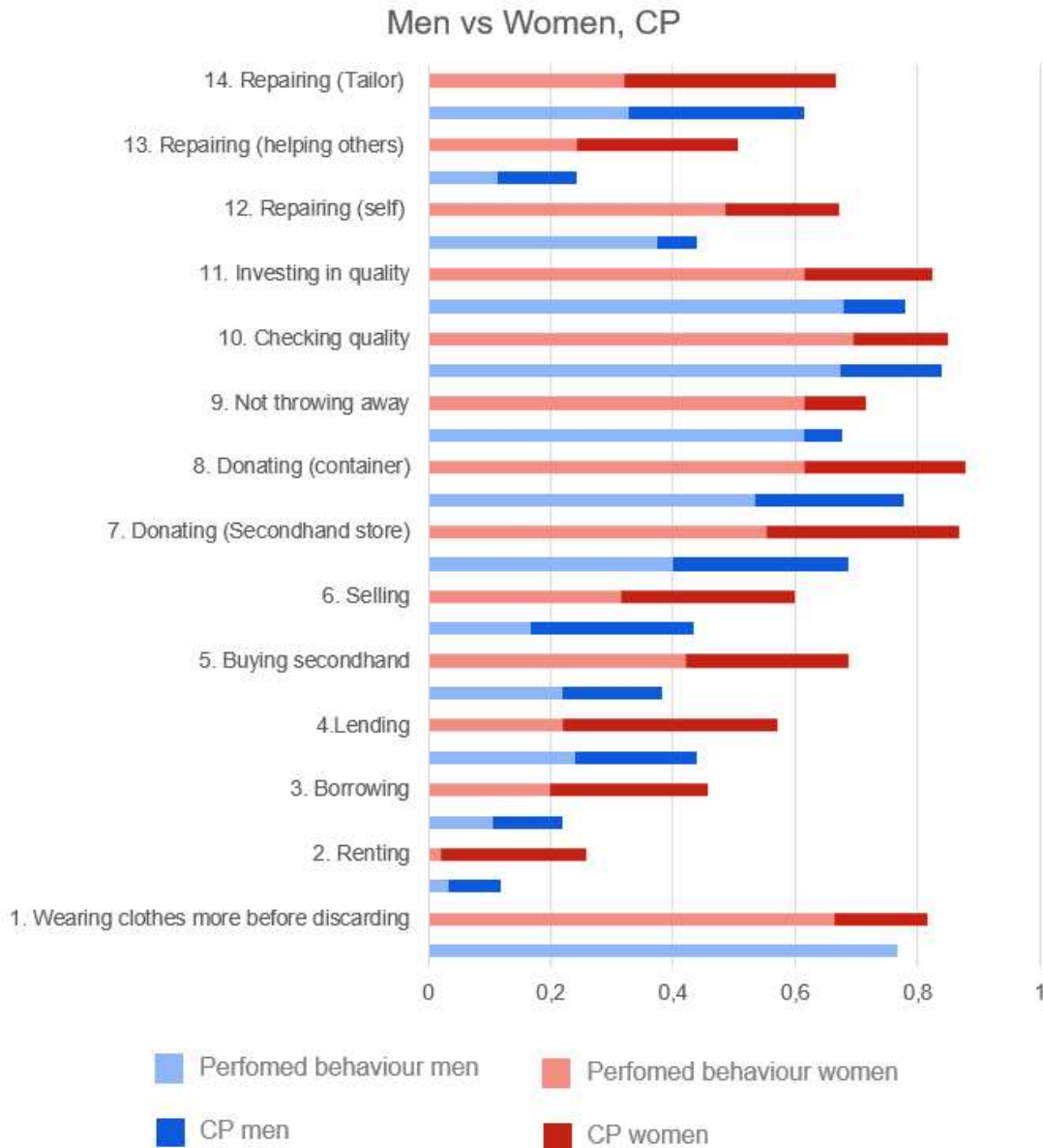
Figure 11: Men vs Women CP

More vs Less sustainable

For this comparison, the participants were divided into three groups based on their answer to the question 'How often do you take sustainability into account during daily life (score 1-10)'. The groups are 'Least sustainable' (scores 1-5), 'Medium sustainable' (scores 6-7), and 'Most sustainable' (scores 8-10).

As can be expected, the most sustainable group scores highest at most of the performed behaviours, especially for self-repairing, investing in quality, and buying second-hand. Surprisingly, the least sustainable group scores higher than the medium sustainable group for donating at a container, selling clothing, lending, borrowing, and wearing clothing more before discarding. The first one can be explained by the fact that the least sustainable group donates less at second-hand stores. Also surprisingly, the least sustainable group has the highest change potential for repairing (both self-repairing and tailor-repairing), checking- and investing in quality, and not throwing clothing away. It

56

is likely that this is because people in the more sustainable groups who are willing to perform these behaviours, already do so.

There is not much difference in CP between the most- and medium sustainable groups, except for lending and renting, for which the most sustainable group has a higher CP.
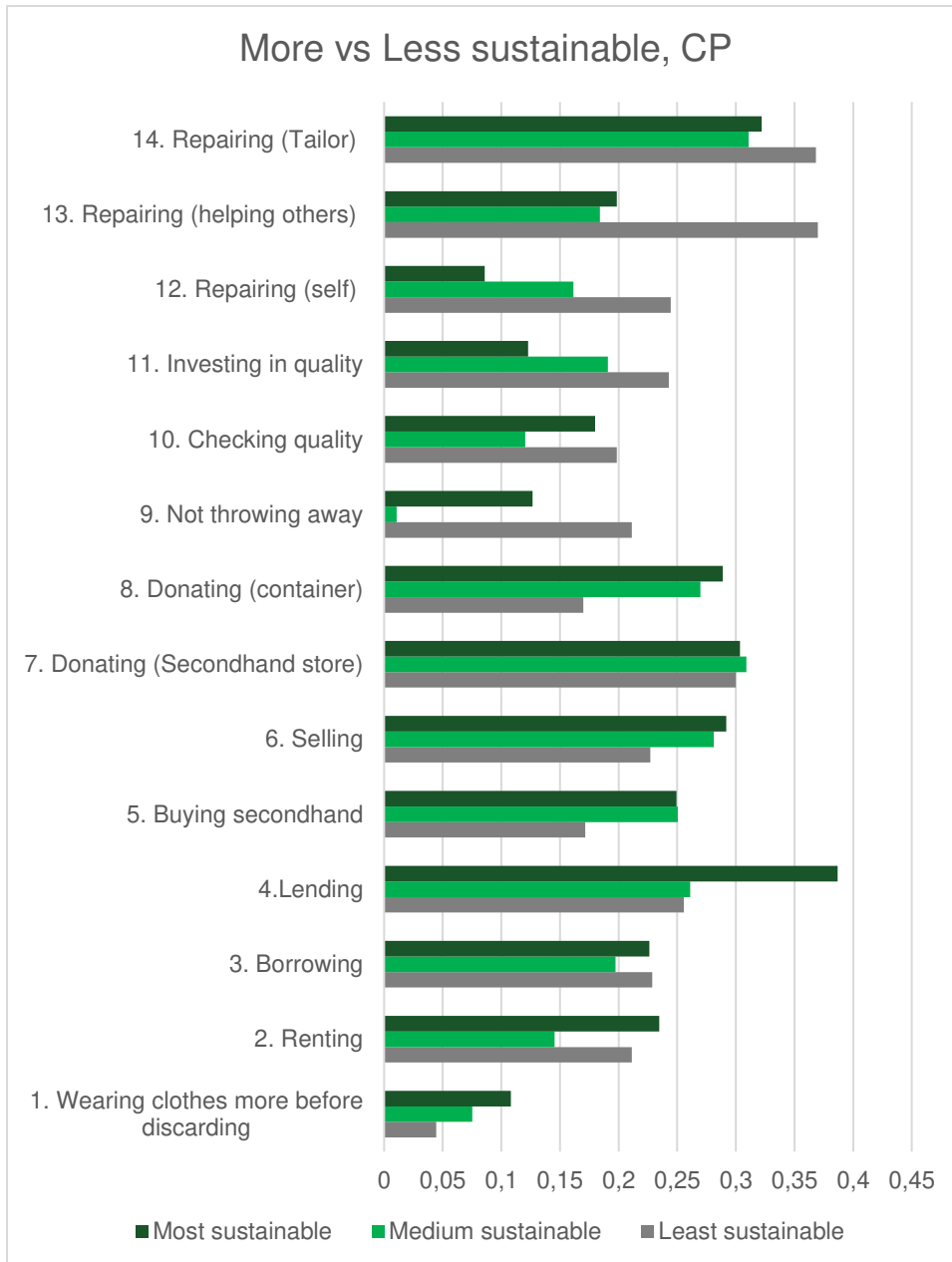
Figure 12: More vs Less sustainable CP

Age

Self-repairing (and helping others) is most often performed by the age group 60+. The youngest age group (16-25) trashes clothing more often. The 60+ donates the most clothing but sells the least. Younger people buy more second-hand then older people. Younger people lend and borrow more clothing. Younger age groups (16-25 and 26-40) have a higher CP for most of the behaviours the older age groups. The age group 26-40 has the highest CP for letting clothing be repaired by a tailor, and the age group 16-25 for repairing clothing themselves. 26-40 has the highest CP for donating

and selling clothing, 16-25 for borrowing and renting clothing. 16-25 has an almost non-existent CP for 'Wearing clothes more before discarding'.
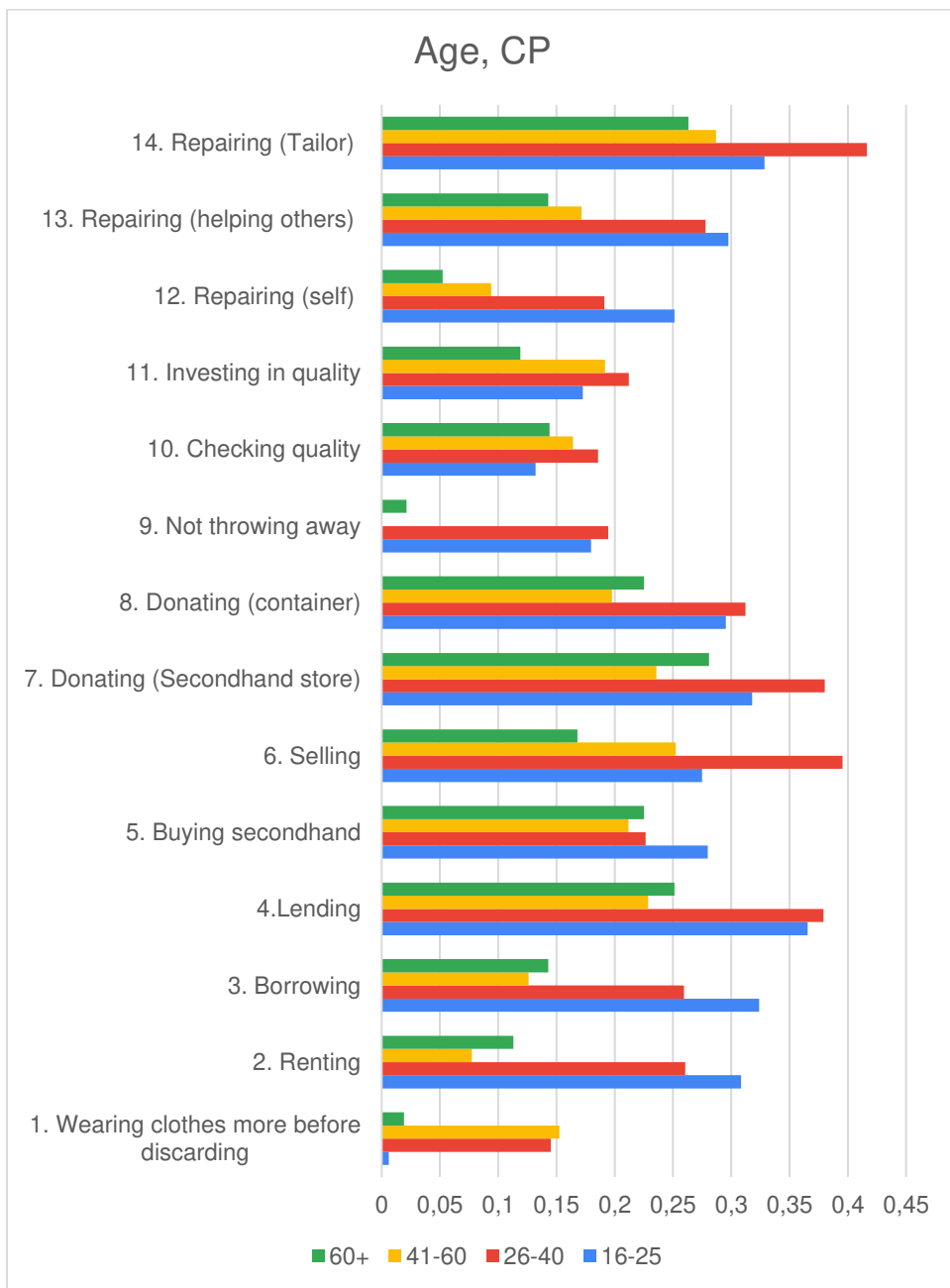
Figure 13: Age CP

5 CATEGORIZED INTERVENTION OBJECTIVES
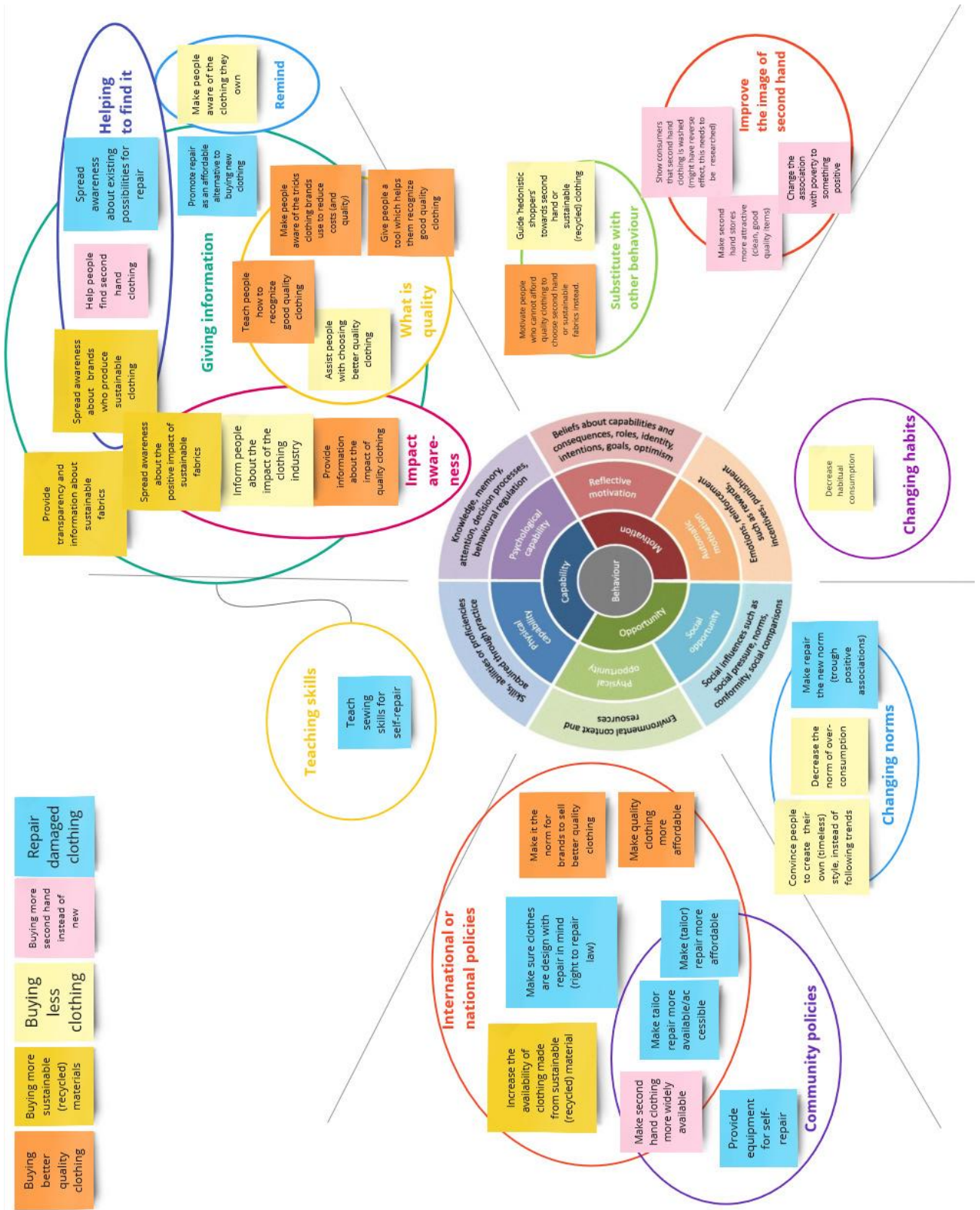
Figure 14: categorized Intervention Objectives

6 TARGET GROUP BRAINSTORMING

6.1 PARTICIPANTS

First session
Participants: A (M 58), B (V 56), C (M 24)
Date: 29-12-2023

Figure 15; First brainstorm session setup

Second session
Participants; D (F, 23), E (M, 24), F (F, 23), G (M, 25)
Date: 14-01-2024

Figure 16; Second brainstorm session setup

Third brainstorm
Participants; H (F,), I (F,), J (F,)
Date: 22-01-2024
(No picture)

6.2 ROUND 1: OWN EXPERIENCES

First session
Due to lack of a whiteboard at the location, the behaviour posters were spread out on a table, so that sticky notes could be stuck underneath them. During the first round, the participants were given two colors sticky notes, on which they could write positive and negative experiences with the behaviours. Participant A had some difficulty with this since he had rarely participated in the behaviours. The other two participants could come up with multiple positive and negative examples. After the participants were out of ideas, they each received 5 stickers with which they could vote on experiences they also had. The experiences and votes are written out in **Error! Reference source not found.**.
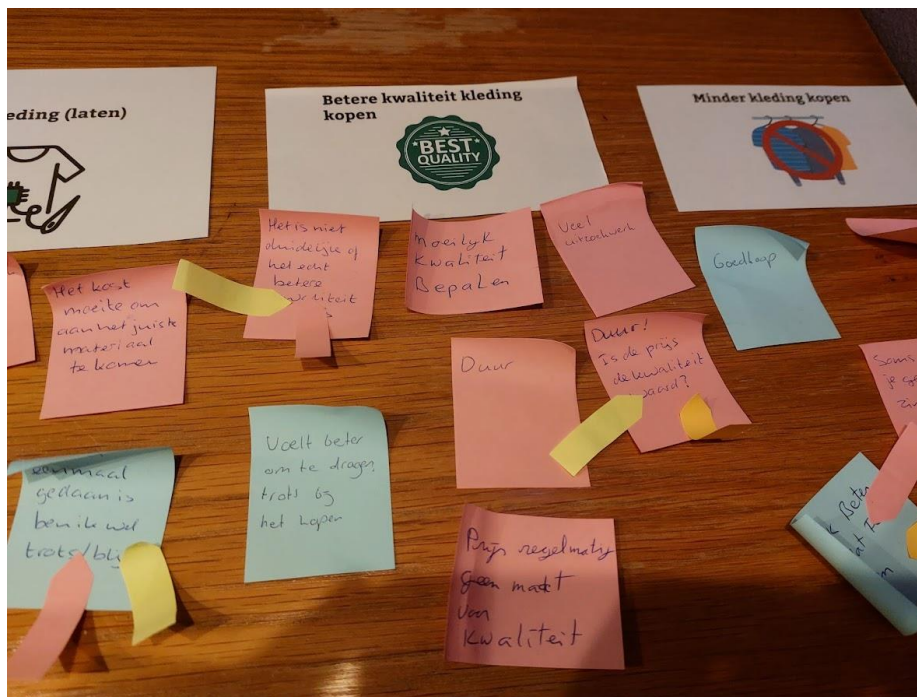
Figure 17; Own experiences example

BEHAVIOUR	POSITIVE EXPERIENCES	VOTES	NEGATIVE EXPERIENCES	VOTES
BUYING SECOND HAND	One of my favorite shirts is second hand		Little available in shops	2
	Thrifting is like treasure hunting	1	Secondhand men's clothing is boring	

DONATING/SELLING CLOTHING	Feels good, woke	Where?	2
		Selling takes effort	1
		I did not know you could do this with damaged clothing	
RENTING CLOTHING	Prom, when clothes are expensive and for 1 time	1	
BORROWING CLOTHING	Good bonding	You have to have the same size	
	Sometimes you forget to give it back		
REPAIRING CLOTHING	This seems fun/nice to do	Procrastinating to start	
	Fulfillment to do it yourself	It is difficult to obtain the right material	
	When it is done, I feel proud/happy	2	I don't have the skills for it
BUYING BETTER QUALITY	Feels better to wear, feeling of pride during buying	It is not clear whether it is really better quality	2
		Determining the quality is hard	
		Much research effort	
		Expensive	
		Expensive/ is the quality worth the price?	2
		Price is often not an indication for quality	

BUYING LESS CLOTHING	Cheap		My mom thinks I'm boring
	Thinking more critical about what to buy	2	Sometimes you just want something new

Second session

Again, a table was used to spread out the behaviours and to place the sticky notes. This time, the participants were given unlimited sticky notes to vote on the experiences they agree with, which resulted in a larger number of votes. A disadvantage of this is that it is harder to see which experiences are most important, but an advantage is that it is visible how many participants agree with the experiences.

Figure 18; Experiences second session

Table 1; Experiences session 2

BEHAVIOUR	POSITIVE EXPERIENCES	VOTES	NEGATIVE EXPERIENCES	VOTES
BUYING SECOND HAND	Judo suits are very durable and good to buy second hand	2	Many second hand clothes in my opinion also look like they are A lot of times, second hand clothing in stores is almost, if not more, expensive then the clothes I normally buy new	
	I found my favorite pieces second hand. Such unique things you can find. Often cheap			
DONATING/SELLING CLOTHING	Donate clothes via Sellpy - Easy - Better then to throw away	2	My clothes are often already broken before I can donate, so I don't need to do this often	
	Sell clothes via Sellpy - Just as easy - You get money for it so also better then throwing away	2	Selling takes a lot of time	
	- Donate clothing to people in need (feel good about myself	2	Clothes that no longer fit, but are (lightly) damaged. It takes more effort to donate them (since repairs are needed) so they end up staying in the back of my closet	

	Especially things that don't fit anymore, like children's clothes, you feel are getting a good new life, whenever I donate	1	Selling or donating clothes is something that doesn't seem too hard but throwing the in the recycling is just so much easier on campus here	1
	Shoe box collection event in elementary school. We were encouraged to all fill a shoe box with clothes that fit no longer	1		
RENTING CLOTHING	More possibilities in gala dresses, without having to buy one to wear once	3		
BORROWING CLOTHING	Family with older cousins, would lend and gift clothing	2	My mom very often offers me some older stuff from her wardrobe, but these are oftentimes things I would never wear, so you have to have the same style for this to work (if you care about that like me)	1
	(participant G) and I have thought about buying hoodies or sweaters for 'us', so we can share them. Not both of us have to own so many	2		
	Sharing makes the pool of clothes to choose from bigger, so you can alternate	2		

	more, making the urge to buy new less			
	Me and my friends often exchange clothes, either permanently or we just ask the others if they have something for a specific occasion (like a theme party, etc.)			
REPAIRING CLOTHING	In my hometown there is a great clothes repair shop, and I was always surprised how cheap it was	1	Some people can't mend themselves and can't pay someone to fix Can look bad when done wrong	1
	I get creative and love making things myself. Longer lifespan Upcycling	1		
BUYING BETTER QUALITY	You feel really good when wearing them		Better quality is hard to see, sometimes a cheap sweater lasts years while others don't	2
	They often last very long, so maybe you also save money		Better quality = higher price. And even then, it is not always guaranteed (I have bought clothes that were very cheap and lasted a long time vs. more expensive that only lasted about year	3

	Watching YouTube video about how to see the quality of products	1	Expensive. Also, hard to know whether something is good quality	2
			Not enough knowledge about how to judge quality. Also not knowing the ideal brand for price/quality ratio	2
BUYING LESS CLOTHING	Good for your wallet	2	You get tired of your clothing and feel like you need new ones, or you see something that you really like, and can't hold back.	1
	Forces you to think more creatively with what you've got			
	Knowing what is in my closet, so I only buy clots that I really need and not the 15th pair of black socks	1	Parents insisting that you need something new for the holidays/your birthday. Or social pressure	
	Not buying online, so I can't impulsively shop		Personally just hard for me, because I want to have many options (and also can never say no to merch at a concert)	1
	After buying better combinable clothing, I noticed I also had to buy less	1		

Third session
Due to time constraints, this step was skipped during the third session. Instead, the most frequent answers to the question 'What would motivate you to do behaviour X?' from the survey were given as inspiration for the brainstorm.

6.3   ROUND 2; BRAINWRITING

First session
After the introduction, the participants started with a brainwriting session. 7 A4 sheets where used, each with one of the seven behaviours written on top. Each participant received each sheet two times during the exercise. Each round lasted 2 minutes during the first time, and 3 minutes during the second. The researcher participated during this round. All the sheets were filled with ideas at the end. Only writing was used, no drawing. All of the participants felt like they were completely out of ideas after the exercise.

Second session
Due to time constrains during this session, only one round of brainwriting was done, so each participants received each of the seven sheets once. The researcher did not participate this session

Third session
During this session, one round of brainwriting was done as well. The researcher participated during this session.

6.4   ROUND 3; CUED BRAINSTORM

First session
Cued brainstorming was introduced as a method to gain new inspiration after one runs out of ideas. The participants mentioned that they liked learning about the theory behind the exercises.
This exercise was done together with the researcher and all three participants. Only 4 cue words were used, since each sparked a long discussion with many ideas; Shop, Filling, Understanding and Advertising

Ideas were written on sticky notes, which were first placed under the right behaviour, but later multiple ideas were written on one post-it, which made categorizing impossible.
Both the cue words and the ability to discuss sparked many new ideas.

Second brainstorm
The words used during the second brainstorm were: Outside, Elderly, Quality control, Decade, Sacrifice, Theory, and Influence. The researcher participated during this session as well

Third brainstorm
The words used during this brainstorm were Difficulty, Trust, and Reward. This exercise sparked much discussion about the current system and new ideas between the researcher and participants.

6.5   ROUND 4; VOTING

First session

Voting on the best ideas was done by reading trough the brainwriting sheets and post-it notes with ideas. Each participants mentioned ideas which they liked, which were all written down on one sheet after some discussion. This resulted in one A4 sheet filled with the most liked ideas, in no particular order:

- A quality label for clothing
  - Price/How long it will last
- Being able to repair clothing at the shoemaker
- Sewing lessons at schools
  - Focus "cool" clothing, pimping clothing
- Sewing machines and sewing lessons in community centres
- Making clear how much money you save by buying second hand
  - Mentioning 'new price' in secondhand stores
  - Using as campaign
- Adding repair instructions to clothing in stores
  - Adding a label with instructions
- Selling secondhand buttons and zippers
  - What is left from recycling fabric
- Refurbished clothing shops
- Awareness campaign about the possibility to donate damaged clothing and underwear
- Awareness campaign about the existence of a clothing bank
- A trial period for more expensive clothing

- Awareness campaign about recognizing quality clothing, and how to take care of clothing
- Deposit on clothes, or receiving a discount when donating in a shop
- Mini-clothing-library (like the little libraries for books)
- A link to clothing rental stores attached to tickets for events with a dress code
- Awareness campaign: second-hand clothing is clean and does not shrink anymore (VS new clothing which is full of chemicals)
- Second-hand sections in 'normal' clothing stores
- An app which measures your sizes from pictures and shows how online clothing fits
- Standard clothing sizes
- Adding sizes to clothing (taille + hip + length for jeans, stomach + chest + length for shirts)
- A TV program about a clothing pimping competition (like Lego masters), or about treasure hunting in second-hand stores.

Second session
During this session, all the ideas were read and the most liked by the participants were written down. Some of these ideas can be seen as goals, rather than ideas. These are marked with (goal) and are not written in the matrix.

- More donation points, or picking up donations
  - Transparency about where donations go
- An online donate challenge (via social media)
- Standard testing of clothing quality
- Try to demotivate fast fashion (goal)

- Visualizing the durability of clothes
    - Like a YouTube 'scratch test'
- Make borrowing clothes a talking point amongst friends
- App to see what you have, and to make new outfits
    - See how many options you have
- Encourage upcycling clothes
- Action like dry January, but for clothes
- Encourage waiting X number of days before you buy something
- Cheap subscription service for clothes
- Being able to rent in a normal store
    - Advertise during prom season
- Make clear which secondhand stores are in the vicinity
- Sell secondhand in normal stores
- Make clear that second hand is not dirty, has quality control, and is cheaper
- Make second-hand stores nicer like normal clothing stores
- Make an app to borrow clothes
- Swapping clothes instead of. borrowing
- Versatile clothes (can be used for many outfits)
- Teach how to take care of clothes
    - App
    - Label in clothes
    - In schools
- Slow the fashion industry (goal)

Third session
Due to time constraints, there was not enough time to go through all the ideas. Ideas were therefore selected afterwards.

- A decision tree to find good quality clothing
- Showing the price per year for items
- Household lessons on schools
    - Sewing
    - Washing/taking care of clothing
- Stimulating mindfulness while buying clothes
    - How many times are you going to wear it?
    - Buy a determined amount of clothes per year
    - Buy timeless pieces
    - How many outfits can you create with this piece?
    - Do you really like it?
- Being able to rent baby/children's clothing
- More information about donating damaged clothes
    - Make clear which organizations accept damaged clothes
- Donating clothes to stores who sell it for you
    - Make this option more known
- Let clothing stores encourage sharing of clothes between friends
- Organize clothing trading markets at schools

- Challenge people to create an outfit with borrowed clothing
- Stimulate 'Ask first, buy second' for special occasion clothing
- Couple people with damaged clothes to people who can sow
    - Platform
- Lessons at school about the climate impact of clothing
- Boycotting stores which sell bad quality clothing
- Give people other ways to get the good feeling of buying clothes
    - Experiences
    - Friends
    - Creating something
- Secondhand departments in 'normal' clothing stores
- Stimulate appreciation of 'secondhand treasures'
- Get rid of the 'poor' stigma around secondhand clothing, make it more luxurious.
- More clear washing instructions on machines/labels
- Make rules against greenwashing

6.6   NOTES AFTER THE SESSIONS

Some notes were taken during the first two sessions on how to improve the set-up

First session

- Take some time to group post-its with the same experiences after the first round
- Give them unlimited stickers to vote on joint experiences
- Use better quality sticky notes
- A4 paper is good enough to use for brainwriting
- Explain better that the participants are allowed to draw during brainwriting

Notes after second session
- Ask them to write separate experiences on separate sticky-notes

6.7 BRAINSTORM MATERIALS

Posters

Minder kleding kopen

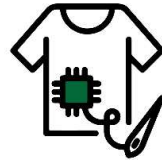**Betere kwaliteit kleding kopen**

Tweedehands kopen i.p.v nieuw

Kleding doneren/verkopen i.p.v weggooien

Kapotte kleding (laten) repareren
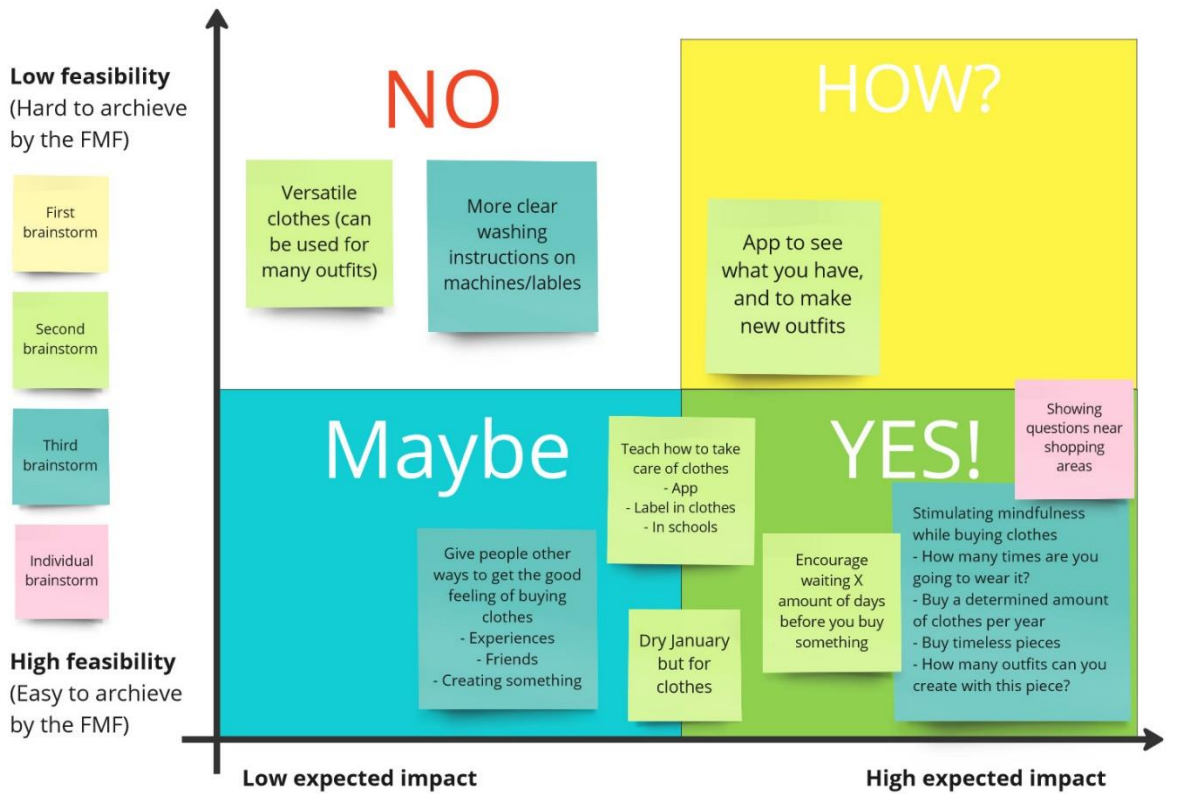

Kleding huren

Kleding lenen van vrienden/familie

Figure 19: Posters of the sustainable behaviours used during the brainstorm sessions

Cue cards

Uniek	Avontuur	Interactie	Winkel
Markt	Opofferen	Kinderen	Ouderen
Hygiëne	Vertrouwen	Armoede	Buiten
Kwaliteit	Selectie	Gemak	Transparantie
Verveling	Geluk	Hechten aan	Overheid
Reclame	Samenhorigheid	Sociale verwachtingen	Identiteit
Gewoontes	Herinnering	Beloning	Feedback
Omgeving	Identiteit	Trots	Informatie
Begrijpen	Label	Schuld	Angst
Verdriet	Toekomst	Tastbaar	Lokaal
Makkelijker	Waarschuwing	Voornemen	Plezier
Invloed	Betaalbaar	Kwaliteitscontrole	Bereikbaar
Hut	Vullen	Stilte	Brein
Verminderen	Boem	Kanaal	Seizoen
Technologie	Transparant	Persoonlijk	Eerlijk
Uniform	Permanent	Schaal	Decennium
Onderzoek	Dankbaarheid	Verdeeld	Buurt
Zin	Promotie	Nominatie	Oor
Classificeren	Jury	Emotie	Planeet
Bevroren	Flex	Verkiezing	Middernacht
Tafel	Moeilijkheid	Wolf	Adres
Hiërarchie	Fantasie	Commando	Kapsel
Overzicht	Kat	Theorie	Verwachting

6.8 FEASIBILITY-IMPACT MATRIXES

Buying less clothing

Buying more second hand
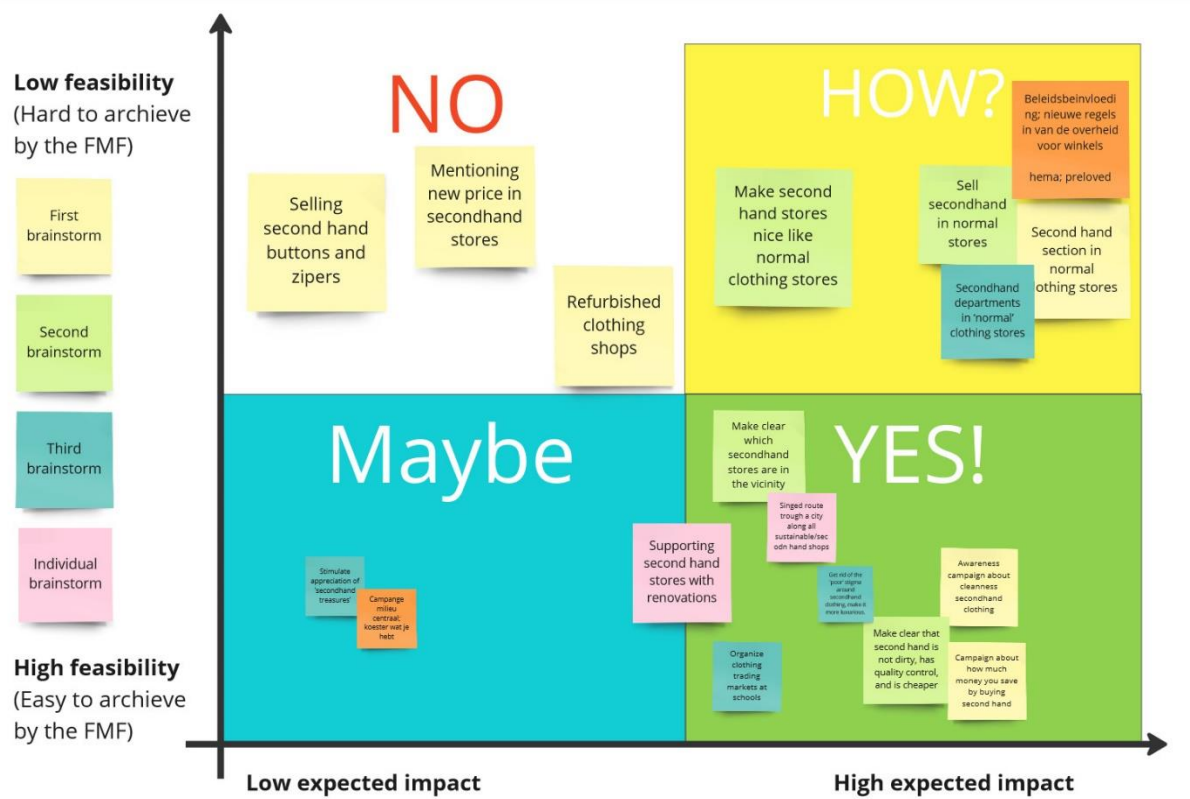
Buying better quality

Donating

Borrowing

Low feasibility
(Hard to archieve by the FMF)

First brainstorm

Second brainstorm

Third brainstorm

Individual brainstorm

High feasibility
(Easy to archieve by the FMF)

NO

HOW?

Let clothing stores encourage sharing of clothes between friends

Make an app to borrow clothes

Maybe

YES!

Challenge people to create an outfit with borrowed clothing

Stimulate 'Ask first, buy second' for special occasion clothing

Make borrowing clothes a talking point amongst friends

Low expected impact

High expected impact

Renting

Low feasibility
(Hard to archieve by the FMF)

First brainstorm

Second brainstorm

Third brainstorm

Individual brainstorm

High feasibility
(Easy to archieve by the FMF)

NO

HOW?

Cheap subscription service for clothes

Being able to rent in a normal store

Being able to rent baby /children's clothing

Maybe

YES!

Link to clothing rental attached to invites

Low expected impact

High expected impact

Repairing

Low feasibility
(Hard to archieve by the FMF)

First brainstorm

Second brainstorm

Third brainstorm

Individual brainstorm

High feasibility
(Easy to archieve by the FMF)

NO

HOW?

Being able to repair clothing at shoemaker

Adding repair instructions to clothes in stores

Maybe

Couple people with damaged clothes to people who can sow - Platform

YES!

Encourage upcycling clothes

Sewing machines and lessons in community centres

Low expected impact

High expected impact

Multiple/other

Low feasibility
(Hard to archieve by the FMF)

First brainstorm

Second brainstorm

Third brainstorm

Individual brainstorm

High feasibility
(Easy to archieve by the FMF)

An app which measures your sizes from pictures and shows how online clothing fits Standard clothing sizes

NO

A TV show about clothing pimping or treasure hunting in second hand store

HOW?

Adding more sizes to clothing (for better fitting)

Creating more availability by requiring retailers to sell second hand and sustainable clothing

Maybe

Using role models to convince people

Showing where sustainable resources are trough a route (footsteps/signs)

YES!

Household lessons on schools - Sewing - Washing/taking care of clothing

Ethical consumption + Sewing lessons at school (pimping clothing)

Shopping bag with info/reminders

Show self-benefits for hedonistic shoppers

-Lessons at school about the climate impact of clothing

Low expected impact

High expected impact

7 INDIVIDUAL BRAINSTORMING

Figure 20: Individual brainstorming sheet 1
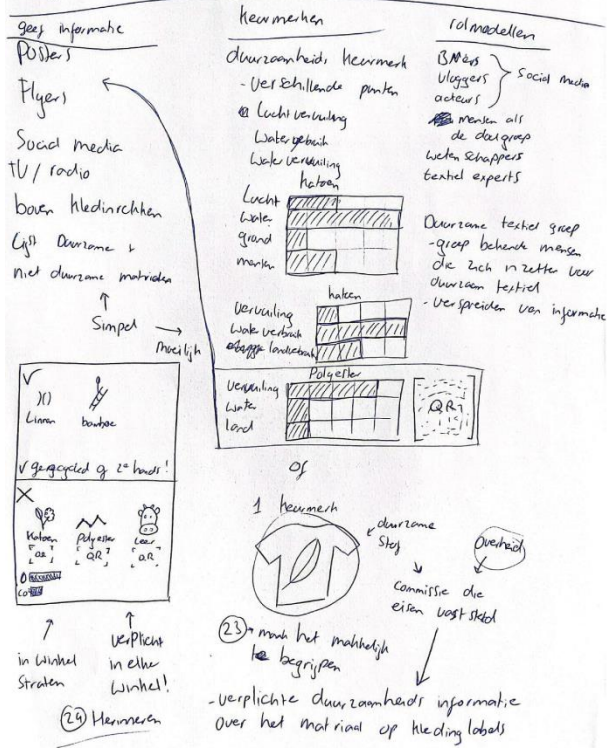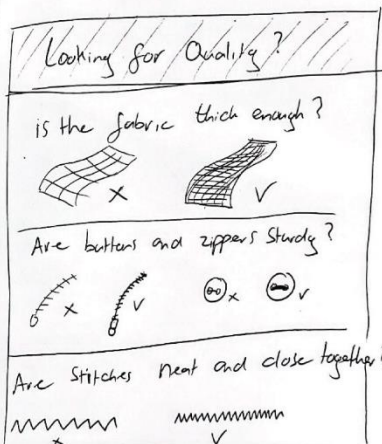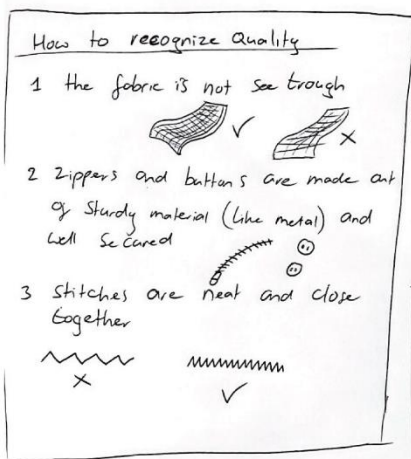
Figure 21: Individual brainstorming sheet 2
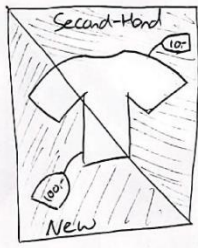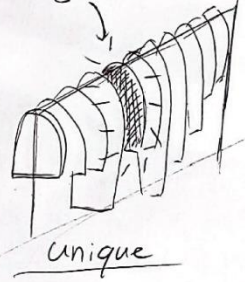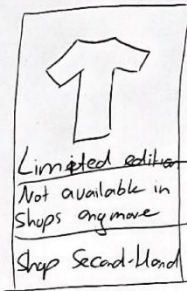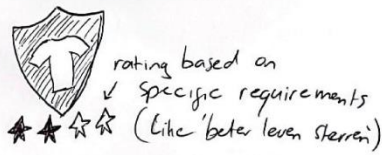
Figure 22: Individual brainstorming sheet 3
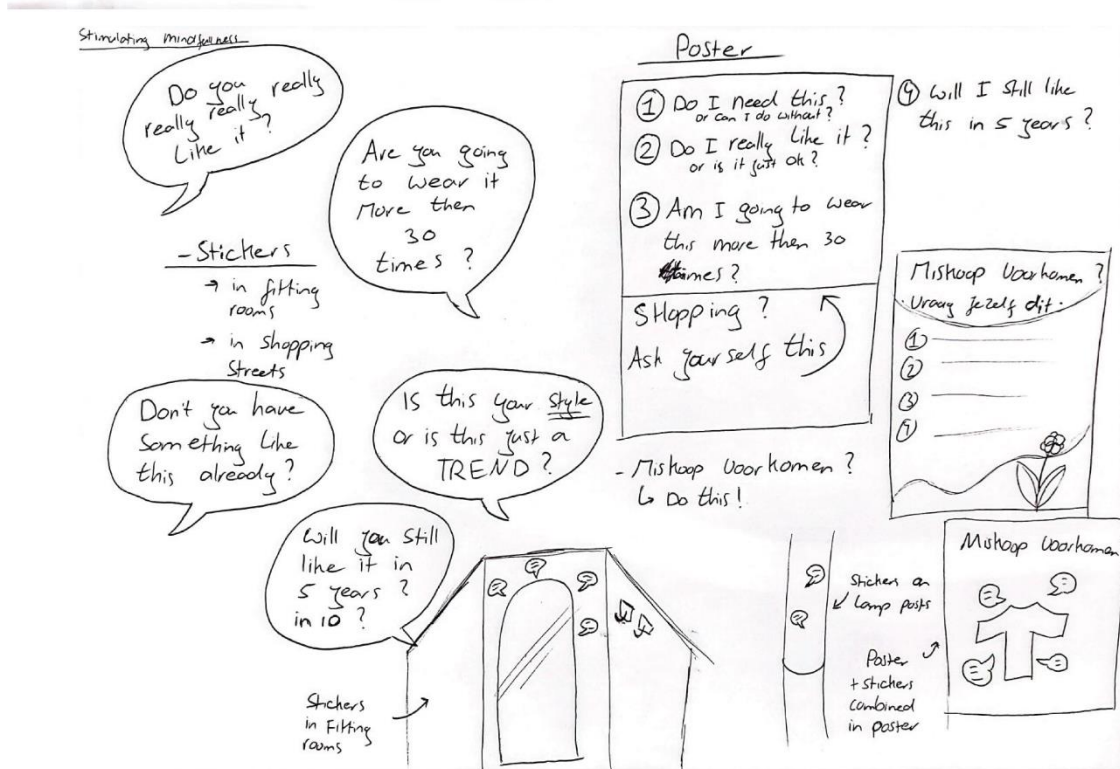
Figure 23: Individual brainstorming sheet 4

8 Target group evaluation full summary

Concept 1: Creating more availability of sustainable materials and second-hand clothing

Participants A and B were very enthusiastic about this concept, and both named it as the best out of all of the 10 ideas. Participant A mentioned they would directly go to a second-hand section in a regular shop, even before going to the sales-section. Participant D also mentioned that this would instantly solve the lack of availability and named it the best solution out of all 10.

Participant C also thought it a good idea but had some concerns about retailers creating loopholes to work around laws, such as making only small items out of recycled materials to meet a certain threshold. This should be considered when creating such requirement. Participant D also mentioned that shop owners would likely protest such measurements.

Participant C also mentioned that shops should not be held responsible for the quality of the items of other brands, in case they sell these items second hand, which means there needs to be a disclaimer that the second-hand items can have flaws.

Participant B mentioned that brands should be able to choose which items they want to offer second-hand, and that it would be helpful to make a campaign about the availability of second-hand items in regular shops, once it is implemented.

Participant D mentioned that the availability of more sustainable fabrics will only have a large influence if it is not more expensive than regular fabrics.

Concept 2: Subsidizing sustainable resources

Both participants A and B mentioned that subsidizing tailor repair might create more interest in repair, and therefore also more interest in becoming a tailor, which creates more opportunities for repair. Participant C mentioned that availability of tailor shops should also increase. Participant C mentioned that a subsidy system for repair should be easy to use for both consumers and tailors. Participant D was not enthusiastic and mentioned that this would not create long lasting effects, since people would stop going to tailors as soon as the subsidies stop.
Both participants A, B, and C were not enthusiastic about subsidizing quality clothing or penalizing bad quality clothing. Participant A mentioned that subsiding quality clothing would only lead to more consumption. Participant D was very enthusiastic about adding an excise tax to fast fashion clothing, since that would prevent people from buying excessive amounts of clothing, and would motivate people to choose better quality, since the prices would be closer together.

Concept 3: Stimulating mindfulness while buying clothing

Both participants A and B did not like this idea. They found it patronizing and mentioned that it would work counterproductive (invoke defensive reactions). Participant A mentioned that positive reinforcement would work better, like complimenting sustainable behaviour. Participant B mentioned that giving information about why a behaviour is sustainable would work better. Participant C was also not enthusiastic about the idea, but mentioned that it would be useful for people to consider some questions before purchasing clothing (E.g., can I make at least 3 outfits with this piece?). Participant D thought it a good idea to stimulate mindfulness, and that it could prevent impulse purchases. However, he mentioned that it was important to ask the questions in a non-judging manner.

Concept 4: Awareness campaign about quality clothing

All the participants found it a good idea to make people more aware about how to recognize quality clothing. Participant A mentioned that spreading this information on social media and via influencers would work better then via posters or flyers. Both participants A and B agreed that the information would stay in the back of people's mind, and would influence them during purchase decisions, even when not actively thinking about it. Participant D was mainly interested in the value of items (price/quality), so he wants to be able to see how long an item will last. Participant C mentioned that it would be good to make a campaign with a little information, and to let people request more elaborate information themselves.

Concept 5: Quality standards and label for clothing

The participants where not very enthusiastic about introducing a quality label. Only participant C mentioned that she would use a quality label when choosing jeans or sportswear. Participant A wanted to know exactly what a label says about an item, to see if it meets her requirements too. She mentioned it would be a good idea for more expensive items, like coats. Both participants B and C mentioned that it would be hard to implement. Participant B mentioned it would be better to inform people about how to recognize quality. Participant D mentioned a quality label would not convince him to buy more expensive clothing.

Participant A mentioned that banning low quality clothing would only result in more online purchases outside of Europe.

Concept 6: Highlighting self-benefits for buying second-hand clothing

All the participants where enthusiastic about this idea. Participant A mentioned that seeing how much you save with buying second hand really appeals to her. She also mentioned a self-benefit she experienced while buying second hand, namely being able to see what a piece of clothing looks like after being used and washed, which gives a better guarantee about the quality than seeing a new item. Participants B and D mentioned that this would have an impact, since Dutch people love saving money. Participant D added that this would be the perfect time to roll out such a campaign, since more people are struggling financially because of inflation. Participant C also mentioned to highlight the feeling of satisfaction after you found an unique item. Participant D mentioned that this would work for those who are not concerned with sustainability.

Concept 7: Showing where to find resources (second-hand shops, sustainable brands, tailor shops)

The participants where not enthusiastic about this idea. Participants B and C mentioned that this would not be possible because it would be unfair marketing for sustainable shops. Participants A, B and D mentioned it would not have added value, since people can already find the shops they are looking for on Google maps. Participant D added that it would not reach the target audience, since people who are interested in these shops will look for them online, and people who are not interested will not be convinced by such a route.

Participant B did not like the idea of adding information about sustainable behaviour in shopping streets, because this felt intrusive.

Participants A and B mentioned that it would be better to highlight sustainable shops in a different way, for example with a national sustainable-shop symbol which they can add to their store-front. Participant C suggested a single poster with a map with all of the sustainable locations, since this would be easy to replace once shops move location, and to add a QR-code for additional information.

Concept 8: Supporting second-hand stores with renovations

The participants where moderately enthusiastic about this idea. Participants A, B, and C mentioned that to location of the shop is more important than its looks (since many larger second-hand stores are not near shopping streets). Both A and B liked the idea of providing information about how to make a store more attractive but disliked the idea of giving subsidies. Participant C mentioned that a campaign about the renovations should be created as well, otherwise no new customers will come to the stores. Participant D suggested to highlight the benefits for stores themselves (more customers), to gain more participation.

Concept 9: Ethical consumptions + sewing lessons at schools

All the participants found this a good idea. Participant A mentioned that a school is the ideal location to spread such information and skills, but that it would be better to teach this at high schools instead of pre-schools. Participants C and D also suggested to keep sewing lessons simple with only needlework, no sewing machines. Participant B suggested to add a fashion show at the end of the lessons, where children can showcase their creations. Participant C proposed to add information about clothing care (like washing instructions).

Concept 10: Platform on which consumers can rate brands on their durability

The participants did not find this a good idea. Participants A and D mentioned that most clothing brands already have review options. Participants B and C added that clothing lines change so often that it would not be possible to review quality before new items are in stores. Participant C mentioned that people have to be reminded and motivated to add a review of a piece of clothing which they have bought a while ago, and that they need to remember how often they have worn and washed it to add a reliable quality review. Participant C also said that some brands have so many items, that it is hard to judge these based on some items.

Stap voor Stap
Naar Duurzame Gedragsverandering

Door Renate Overdijk

Introductie

Om duurzaamheidsdoelstellingen te halen zijn veranderingen in het gedrag van de consument vaak noodzakelijk, maar mensen overtuigen zich duurzamer te gedragen is vaak een lastige opgave. Iedere situatie is anders en vraagt om een specifieke aanpak voor effectieve gedragsverandering.

Dit boekje legt uit hoe een project stap voor stap kan worden aangepakt. Deze methode is gebaseerd op verschillende gedragsveranderingstheorieën en onderzoeken, en is samengesteld tijdens een masterthesis in opdracht van de FMF

Stappenplan

Stap 1
Probleem Definiëren
P. 3

Stap 2
Doelgroep Definiëren
P. 4

Stap 3
Gedragingen Definiëren
P. 5

Stap 4
Potentiële Milieuwinst
P. 6

Stap 5
Veranderpotentieel
P. 7-8

Stap 6
Barrières
P. 9-13

Stap 7
Strategieën
P. 14-15

Stap 8
Brainstormen
P. 16-18

Stap 9
Evalueren
P. 19-21
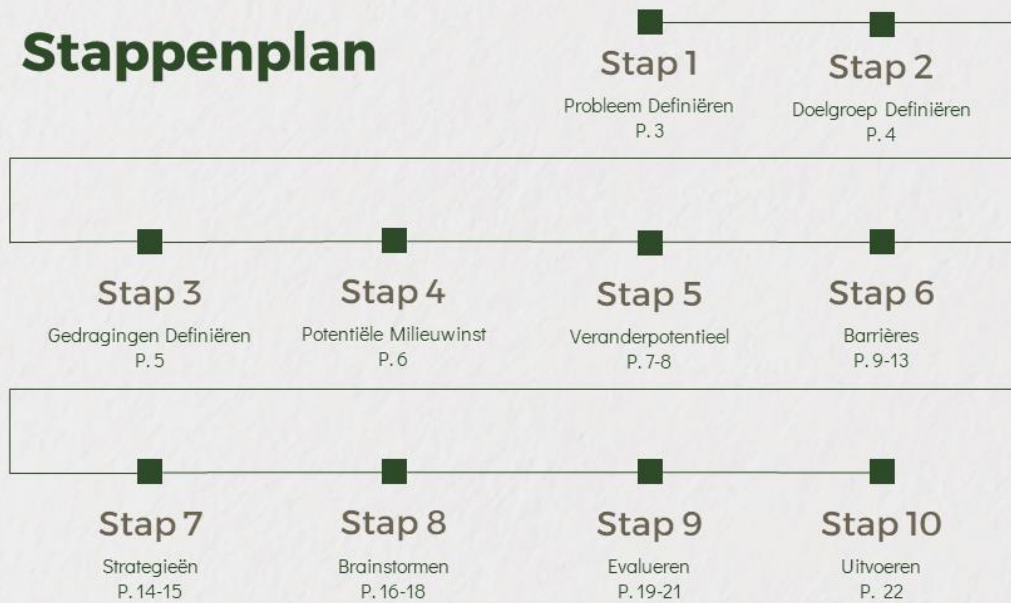
Stap 10
Uitvoeren
P. 22

Stap 1. Probleem Definiëren

De eerste stap is het definiëren van het probleem. Welk probleem moet er precies worden opgelost met gedragsverandering? Voor een goede definitie van het probleem is onderzoek nodig naar de huidige staat van het probleem en het huidige gedrag van consumenten. Hiervoor kan bijvoorbeeld literatuuronderzoek worden gedaan, of interviews met experts.

Stap 2. Doelgroep Definiëren

De tweede stap is het definiëren van de doelgroep. Wie moeten precies hun gedrag aanpassen om het probleem te verminderen? Een meer gespecificeerde doelgroep vergroot de kans op het creëren van een effectieve gedragsinterventie, omdat deze dan meer afgestemd zal zijn op de specifieke eigenschappen van deze doelgroep. Literatuuronderzoek kan helpen om een doelgroep te selecteren. De doelgroep kan tijdens het onderzoek verder worden gespecificeerd.

Stap 3. Gedragingen Definiëren

Nu moet worden vastgesteld welke gedragingen mensen uit kunnen voeren om de duurzaamheidsdoelstelling te halen. Dit kan er één zijn, maar ook meerdere. Bij bijvoorbeeld een project over verduurzaming van de kledingmarkt kan worden gedacht aan gedraging als 'Meer tweedehands kopen' en 'Meer gerecycled materiaal kopen'.

Het kan helpen om een visueel overzicht te maken van de gedragingen die een individu uit zou kunnen voeren, zoals in de afbeelding hiernaast. Dit hoeft zeker niet mooi, een snelle schets op papier is voldoende. Zo is snel te zien welke gedragingen al zijn benoemd, en welke nog missen.

Stap 4. Potentiële milieuwinst

Als er tijdens de eerste stap meerdere gedragingen zijn vastgesteld, is het natuurlijk een goed idee om de aandacht te vestigen op de gedragingen die de meeste invloed hebben op het milieu. Dit wordt de Potentiële Milieuwinst (PMW) genoemd.

Onderzoek hoeveel invloed een gedraging heeft op het milieu als het wordt uitgevoerd door een individu. Maak hierbij bijvoorbeeld gebruik van experts en literatuur (bijv. Koch, 2023). Selecteer hierna één of meerdere gedragingen om aan te kaarten tijdens het project.

Bij het voorbeeld 'verduurzaming van de kledingmarkt', zijn de volgende gedragingen geselecteerd op basis van hun PMW:

- Minder kleding kopen
- Meer tweedehands kleding kopen
- Meer gerecycelde matrialen kopen
- Betere kwaliteit kleding kopen
- Vaker kleding laten repareren

Stap 5. Veranderpotentieel

Het kan zijn dat na stap 2 nog een lange lijst van gedragingen over blijft. Om een betere selectie te maken kan het veranderpotentieel worden gebruikt (Koch, 2023).

Wat is het?
Het veranderpotentieel (VP) is het verschil tussen het aantal mensen die bereid zijn een gedraging uit te voeren, en het aantal mensen die dit daadwerkelijk doen. Dit is dus het aantal (percentage) mensen wat wel bereid is om de gedraging uit te voeren, maar dit nog niet doet.

Wanneer gebruik je het?
Over het algemeen is het makkelijker om mensen te overtuigen iets te doen als ze er al toe bereid zijn. Interventies voor gedragingen met een groot VP hebben daarom vaak meer kans van slagen. Om de selectie gedragingen te verkleinen kan daarom worden gekozen om alleen te focussen op de gedragingen met een groot veranderpotentieel.

Gedragingen met een klein VP zijn niet onmogelijk om te veranderen, maar hiervoor zal meer aandacht moeten worden geschonken aan het verhogen van de motivatie (zie stap 4).

Hoe bereken je het?
Het veranderpotentieel bereken je door het percentage mensen wat een gedraging uitvoert (zeggedrag) af te trekken van ven het percentage mensen wat bereid is om dezelfde gedraging uit te voeren.

Voorbeeld

De volgende gedraging is gevraagd in een enquête:

"Ik koop minder dan 10 kledingstukken per jaar."

23% van de deelnemers is het hier mee eens

"Ik ben bereid minder dan 10 kledingstukken per jaar te kopen."

45% van de deelnemers is het hier mee eens

Het veranderpotentieel is daarom 22%

Een grafiek kan worden gemaakt voor een mooi overzicht van alle veranderpotentiëlen.

Legend: Zeggedrag — Veranderpotentieel
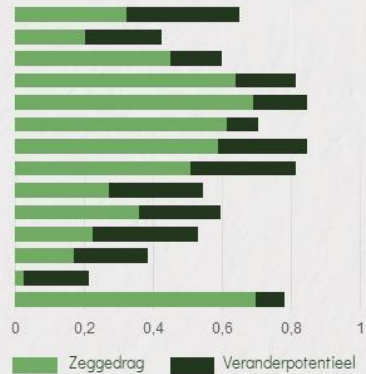
Stap 6. Barrières

Nu er een definitieve keuze is gemaakt tussen de gedragingen, moet worden onderzocht wat men er van weerhoud om de gedraging(en) uit te voeren; De Barrières moeten worden gevonden.

Informatie hiervoor kan worden gevonden in literatuur, maar dit kan natuurlijk het best gevraagd worden aan de doelgroep zelf met behulp van interviews of enquêtes.

Het komt vaak voor dat mensen zelf niet precies weten waarom ze bepaalde acties wel of niet uitvoeren. Onbewuste gewoontes en invloeden

van buitenaf bepalen een groot deel van onze keuzes. Het kan daarom moeilijk zijn om de vraag 'waarom voert u deze actie wel/niet uit?' te beantwoorden.

Het kan ook voorkomen dat deelnemers alleen de eerste barrière die ze te binnen schiet noemen, maar meerdere barrières ervaren.

Hierom kan het helpen om specifiekere of meer gesloten vragen te stellen om barrières te achterhalen. Als leidraad hiervoor kan het COM-B model worden gebruikt.

Het COM-B model

Het schema op de volgende pagina laat het COM-B model zien. Dit model deelt alle factoren die invloed hebben op gedrag op in drie onderdelen: Vermogen, mogelijkheid, en motivatie (Capability, Opportunity, Motivation)(. Elk van deze onderdelen is weer opgedeeld in twee secties, zoals te zien is in het schema.

Net zoal voor het maken van het vuur brandstof, zuurstof, en warmte nodig zijn, is voor gedrag elk van de drie factoren nodig. Als één onderdeel mist, dan brand het vuur niet, en zal het gedrag niet worden uitgevoerd.

Zoals te zien is in het schema, beïnvloeden de factoren ook elkaar. Meer mogelijkheid en meer vermogen kan zorgen voor meer motivatie, en het uitvoeren van een gedraging kan alle drie de factoren beïnvloeden.

Uitleg van de COM-B secties

Vermogen
Mensen moeten zowel fysiek als mentaal in staat zijn om de gedraging uit te voeren. Onder het fysieke vermogen valt het hebben van de benodigde vaardigheden, en onder het mentale vermogen het hebben van de benodigde kennis, aandacht, herinneringen, en gedragsregulatie.

Motivatie
Mensen moeten ook gemotiveerd zijn om de gedraging uit te voeren. Motivatie wordt verdeeld in reflectieve en automatische motivatie.

Reflectieve motivatie wordt aangestuurd door bewuste gedachtenprocessen. Factoren als optimisme, intenties, identiteit, en het vertrouwen in je eigen vaardigheden hebben hier invloed op.

Automatische motivatie wordt aangestuurd door onderbewuste processen zoals emoties en gewoontes, en wordt beïnvloed door prikkels zoals beloningen.

Mogelijkheid
Mensen moeten zowel fysiek en sociaal de mogelijkheid hebben om de gedraging uit te voeren. Met fysieke mogelijkheid wordt bijvoorbeeld de aanwezigheid van benodigde middelen bedoeld. Sociale mogelijkheid wordt o.a. bepaald door sociale invloeden, groepsdruk, sociale normen, en onderlinge vergelijking.

Het COM-B model gebruiken
Tijdens het maken van een vragenlijst kan het COM-B model als leidraad worden gebruikt om vragen te bedenken. Specifieke vragen over de aanwezigheid van vermogen, motivatie, en mogelijkheid zullen een beter beeld geven van aanwezige barrières dan één algemene (open) vraag. Op deze pagina vind u een aantal voorbeeldvragen voor ieder onderdeel.

Voorbeeldvragen
Hier vind u voor ieder onderdeel één of meerdere voorbeeldvragen. Bij het maken van een vragenlijst zullen deze vragen moeten worden aangepast aan de specifieke gedraging.

Fysiek vermogen
• Hebben ze de benodigde vaardigheden om de gedraging uit te voeren?

Mentaal vermogen
- Hebben ze de juiste kennis over de invloed van de gedraging?
- Hebben ze de juiste kennis om de gedraging uit te kunnen voeren?
- Worden ze er vaak genoeg aan herinnerd om de gedraging uit te voeren?
- Kunnen ze hun gedrag genoeg reguleren om de gedraging uit te voeren?

Reflectieve motivatie
- Hebben ze de intentie om de gedraging uit te voeren?
- Hebben ze voldoende vertrouwen in hun eigen vaardigheden?
- Past uit uitvoeren van de gedraging bij hun identiteit?
- Zijn ze optimistisch genoeg over de invloed van het gedrag?

Automatische motivatie
- Welke emoties roept de gedraging op?
- Welke prikkels beïnvloeden het uitvoeren van het gedrag?
- Welke gewoontes beïnvloeden het uitvoeren van het gedrag?

Fysieke mogelijkheid
- Zijn alle benodigde middelen om deze gedraging uit te voeren aanwezig?
- Zijn de benodigde middelen voldoende en toegankelijk?
- Is de gedraging betaalbaar?
- Hebben ze voldoende tijd om de gedraging uit te voeren?

Sociale mogelijkheid
- Welke socialen normen beïnvloeden het uitvoeren van het gedrag?
- Is er voldoende support voor het uitvoeren van de gedraging in hun sociale cirkels?

Het verwerken van de resultaten

Als de resultaten van het onderzoek binnen zijn, kan een lijst van barrières worden opgesteld. Barrières die door meerdere deelnemers worden benoemd komen hierbij hoger op de lijst, omdat de kans groot is dat een groter deel van de doelgroep deze barrières ervaart.

Als er meerdere gedragingen worden onderzocht, kan het voorkomen dat meerdere gedragingen vergelijkbare barrières hebben, bijvoorbeeld het missen van informatie. Deze barrières kunnen misschien aangepakt worden met één interventie. Maak daarom eventueel ook een overzicht van vergelijkbare barrières.

Deze lijsten worden hierna meegenomen naar het volgende onderdeel.

Stap 7. Strategieën

Nu we een lijst aan barrières voor de gedraging hebben opgesteld, wordt het tijd om te kijken hoe we deze barrières kunnen doorbreken.

Er bestaan veel theorieën over gedragsverandering die elk hun eigen strategieën benoemen. Het SHIFT model benoemt bijvoorbeeld vijf categorieën die gedrag beïnvloeden: Sociale invloed, Gewoontes (habits), Individuele identiteit, Gevoelens en cognities (feelings and cognitions), en Tastbaarheid. Elk van deze categorieën bevat zijn eigen gedrags-veranderingsstrategieën (GVS) (White et al. 2019).

Een ander voorbeeld is de Nudging theorie. Deze benoemt strategieën waarmee mensen aangespoord worden bepaalde keuzes te maken, zonder dat ze daarbij hun vrijheid verliezen. (Sunstein, 2014).

De bijgevoegde kaarten bevatten een verzameling van strategieën uit verschillende gedragstheorieën, verdeeld over de COM-B secties waarop ze effect hebben (sommige strategieën kommen meerdere keren voor). Deze kaarten kunnen bijvoorbeeld worden gebruikt om strategieën te selecteren met een team. Een overzicht van deze kaarten is te vinden achterin dit boekje.

Strategieën kiezen
Nu blijft de vraag: Welke strategie kan het best worden gebruikt om een barrière op te lossen? Volgens Rau et al. (2022) bestaat er niet één strategie die effectief is in iedere situatie, en is geen enkele strategie effectief in z'n eentje. Er zal dus per barrière en per situatie moeten worden gekeken welke strategieën effectief zullen zijn.

Ga nog eens na hoe de situatie er uit ziet, wie de doelgroep is, en wat precies de barrière voor de gedraging is. Is de barrière een gebrek aan vermogen, motivatie, of mogelijkheid? Ga hierna door de lijst aan strategieën en schrijf op welke effectief kunnen zijn in deze situatie (of gebruik de kaartjes om een overzicht op tafel te leggen)

Voorbeeld
Voor de gedraging 'Meer tweedehands kleding kopen' is de volgende barrière gevonden: 'Veel mensen hebben een negatieve associatie met armoede als ze denken aan tweedehands kleding, vooral als ze zelf in armoede leven of hebben geleefd.'

Dit is een gevoel (emotie) wat automatische motivaties hindert. Hierom kijken we eerst naar de strategieën voor automatische motivatie. Strategieën die effectief kunnen zijn tegen deze barrière zijn de volgende:

16) Creëer een positief gevoel tijdens- of direct na de gedraging
Door een positief gevoel te verbinden aan de gedraging kan de negatieve associatie worden overschreven.

19) Verander de presentatie
Door de presentatie van tweedehands kleding meer luxueus te maken (bijvoorbeeld door een andere inrichting van de winkel) kan de associatie met armoede worden verminderd.

Nu hebben we een overzicht van de barrières die doorbroken moeten worden, en de gedragsveranderingsstrategieën die ons daarbij kunnen helpen.

Stap 8. Brainstormen

Nu we een lijst aan barrières en bijpassende strategieën hebben samengesteld, wordt het tijd om ideeën te genereren. Brainstormen is een effectieve manier om je creativiteit de vrije loop te laten gaan en veel nieuwe ideeën te bedenken. Deze ideeën hoeven niet realistisch of uitvoerbaar te zijn. Hier kijken we pas later naar. Het doel is nu alleen om zo veel mogelijk ideeën te bedenken voor interventies die de barrière(s) kunnen verminderen. Hierbij kunnen de technieken al leidraad worden gebruikt.

Dit zijn een aantal brainstorm technieken die kunnen worden gebruikt:

Brainwriting (groep)
Geef iedere deelnemer een vel papier en verdeel deze in 3 kolommen, en een aantal rijen gelijk aan het aantal deelnemers. Iedereen krijgt nu 5 minuten de tijd om 3 ideeën te bedenken, en deze in de bovenste

3 vakken te schrijven of tekenen. Hierna worden de vellen doorgegeven en de volgende 3 vakken gevuld, net zolang to ieder vakje een idee bevat. Tijdens het brainstormen kan je zo inspiratie halen uit de ideeën van de andere deelnemers.

Cued brainstorm
Schrijf willekeurige worden op kaartjes of gebruik een online 'random word generator'. Trek een kaartje of genereer een woord, en bedenk een oplossing wat te maken heeft met dit woord. Deze techniek helpt met het maken van nieuwe verbindingen en 'Out-of-the-box' denken, omdat de woorden associaties op kunnen roepen waar je anders misschien niet op gekomen was.

Mindmapping
Een mindmap of woordenweb kan worden gebruikt om ideeën uit te breiden met nieuwe ideeën. Schrijf

de barriére in het midden van een vel papier of whiteboard, en schrijf alle ideeën voor oplossingen die je kunt bedenken hier omheen. Verzin daarna nieuwe oplossingen gebaseerd op de huidige.

De barrières en strategieën lijst gebruiken
Er zijn twee manieren waarop de lijst die we tijdens stap 5 hebben gemaakt kunnen gebruiken tijdens de brainstorm fase;

1) Als startpunt
Tijdens het brainstormen voor een barrière kunnen de bijbehorende strategieën worden gebruikt als startpunt voor de ideeën. Bijvoorbeeld, aan de eerder genoemde barrière 'Associatie met armoede' bij het kopen van tweedehands kleding is de techniek 'verander de presentatie' verbonden. Nu kan worden gebrainstormd over hoe de presentatie van tweedehands kleding kan worden aangepakt. Dit is een meer ingekaderde manier van brainstormen

2) Als controle
Een vrijere manier van brainstormen is om eerst zo veel mogelijk (en zo creatief mogelijke) ideeën te bedenken voor interventies, en hierna pas te kijken of deze de barrières kunnen verminderen, en welke strategieën daarbij worden gebruikt. Veel van de ideeën die bedacht worden zullen niet uitvoerbaar zijn, niet passen bij een barrière, of geen bekende strategie gebruiken, maar wellicht zit er iets tussen wat zelfs meerdere barrières aanspreekt, of meerdere strategieën gebruikt.

Voorbeeld:
Tijdens de brainstorm is het idee 'Ethische kledingconsumptie- en reparatie lessen gegeven door bekende Nederlanders' bedacht. Dit idee kan meerdere barrières verminderen (Bijv. een gebrek aan informatie, een gebrek aan reparatie-vaardigheden, en een negatief beeld over reparatie), en het gebruikt meerdere strategieën (o.a. het gebruik van

rolmodellen, het aanleren van vaardigheden, en het
verstrekken van informatie)

Ideeën uitwerken
Nu is het tijd om een overzicht te maken van de meest
veelbelovende ideeën, en deze eventueel wat verder
uit te werken (bijv. met tekeningen). Tijdens de
volgende stap zullen deze ideeën worden
geëvalueerd, en wordt het beste idee geselecteerd.

Stap 9. Evalueren

De ideeën die zijn bedacht tijdens de brainstorm
moeten op meerdere punten geëvalueerd worden,
voor besloten kan worden welke ideeën kunnen
worden geïmplementeerd.

Is het uitvoerbaar?
Allereerst moet worden gekeken of het idee
uitvoerbaar is. Zijn de juiste middelen beschikbaar? Is
er voldoende budget? Zijn er externe organisaties bij
betrokken? Als een idee niet uitvoerbaar is, kan dit
hier al van de lijst worden gehaald

Is het effectief?
De volgende belangrijke vraag is of het idee effectief
is. Iedere situatie en ieder persoon is anders. Het is
daarom niet te voorspellen of goed bedoelde
interventies ook daadwerkelijk effectief zullen zijn. De
beste manier om dit te onderzoeken is door het idee
te testen onder de doelgroep met bijvoorbeeld een

werkend prototype, alleen is dit vanwege de aard van
het idee of door budgettaire redenen vaak niet
mogelijk.

De tweede beste optie is om het idee te testen met
een zogeheten 'wizard-of-oz prototype'. Dit is een
prototype wat zo gemaakt is alsof het voor de
gebruiker lijkt alsof het werkt, maar dit eigenlijk niet
doet. Bijvoorbeeld: in plaats van een werkende sensor
in het prototype te plaatsen, zit er iemand achter de
schermen die op tijd op een knopje drukt zodat het lijkt
alsof er een sensor in zit. Dit is vaak sneller en
goedkoper te realiseren, en kan wel een goed beeld
geven van hoe de gebruiker met een product om zal
gaan.

Als het echt niet lukt om een idee te testen, kan aan de
hand van uitleg en eventueel tekeningen gevraagd
worden wat mensen uit de doelgroep van het idee

vinden. Hierbij moet echter wel rekening worden gehouden met het feit dat niet alles wat mensen zeggen klopt, en het is vaak lastig om zo te achterhalen of een interventie daadwerkelijk gedrag zal veranderen, vooral als het gericht is op onderbewust gedrag. Het is daarom een goed idee om ook aan gedragsexpert te vragen of ideeën potentie hebben om effectief te zijn.

Is het ethisch?

Bij ontwerpen voor gedragsverandering moet altijd worden nagegaan of interventies ethisch verantwoord zijn

Brey (2006) noemt drie vragen die moeten worden gesteld tijdens een ethische evaluatie van een gedragsveranderings-technologie

- Heeft de interventie een negatieve invloed op de vrijheid van de gebruiker? En zo ja, kan dit worden verantwoord?

- Hebben alle partijen die er mee te maken hebben de kans om mee te beslissen? (Ook de gebruiker)
- Wie draagt de verantwoordelijkheid voor ongewenste gevolgen?

Ongewenste gevolgen

Als laatst moet worden nagegaan welke ongewenste gevolgen een interventie kan hebben, en of deze opwegen tegen de positieve gevolgen. Hierbij moet goed worden nagedacht over alle mogelijke scenario's die kunnen ontstaan, en hoe ongewenste gevolgen kunnen worden voorkomen. Bij deze risicoanalyse moet in ieder geval rekening worden gehouden met de volgende effecten

Het 'Rebound effect'

Soms kan de aanwezigheid van duurzame middelen zorgen voor minder duurzaam gedrag. Denk bijvoorbeeld aan hoe het hebben van een duurzame auto kan leiden tot meer rijgedrag, of hoe de mogelijkheid tot recycling er voor zorgt dat mensen

meer producten gebruiken (zonder schuldgevoel). Dit effect kan er voor zorgen dat duurzame middelen juist zorgen voor meer vervuiling (Rebel, 2023)

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Dit effect neemt plaats wanneer mensen zichzelf een vervuilende actie permitteren na het uitvoeren van een duurzame actie, bijvoorbeeld een vliegvakantie boeken na een jaar minder vlees eten. Dit kan er voor zorgen dat de besparing op het ene gebied teniet wordt gedaan met niet duurzaam gedrag op een ander gebied. Het is lastig te onderzoeken of een interventie tot dit effect zal leiden, omdat het vaak op een heel ander gebied plaatsvind. Maar het is wel iets om rekening mee te houden. (White et al. 2019)

Zelf-defensieve reacties

Soms hebben mensen defensieve reacties wanneer ze leren dat hun gedrag negatieve gevolgen heeft. De 'Cognitive dissonance' theorie legt uit dat mensen soms alleen informatie geloven die hun gedrag motiveren, in plaats van hun gedrag aan te passen.

Het gebruik van schuldgevoelens kan een effectieve techniek zijn voor gedragsverandering, maar het kan ook voor defensieve reacties zorgen.

Stap 10. Uitvoeren

Zodra is vastgesteld dat een idee (of meerdere ideeën) uitvoerbaar is, dat het potentieel effectief zal zijn, en dat het geen grote risico's bedraagt, kan het in uitvoering worden gebracht.

Bij bepaalde interventies kan worden gekozen om het eerst op kleine schaal uit te voeren, zodat eerst kan worden gekeken hoe effectief het is, voor het op grote schaal wordt geïmplementeerd. Dit is vooral een goed idee voor interventies die nog niet uitvoerig zijn getest.

Na het implementeren is het een kwestie van wachten en zien welk effect een interventie heeft. Zelfs na uitgebreide tests en analyses kan een interventie nog onverwachte effecten hebben.

Het blijft een kwestie van uitproberen en kijken wat werkt in specifieke situaties en voor specifieke doelgroepen. Maar deze methode geeft handvatten voor het stapsgewijs ontwikkelen van interventies met een grotere kans van slagen.

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Strategie Kaarten

Motivatie	Motivatie	Motivatie	Motivatie
Help mensen geloven dat ze in staat zijn om de gedraging uit te voeren	Benadruk succesvolle ervaringen van anderen	Gebruik rolmodellen	Versterk de duurzame zelf-identiteit
Dit kan het gevoel van zelfeffectiviteit vergroten (het vertrouwen in je eigen kunnen)	Dit kan het gevoel van zelfeffectiviteit vergroten (het vertrouwen in je eigen kunnen)	Dit kan het gevoel van zelfeffectiviteit vergroten (het vertrouwen in je eigen kunnen). Rolmodellen moeten vergelijk - baar zijn met- of bew onderd w orden door de doelgroep, Benadruk dat het rolmodel w ordt beloond voor het gedrag en dat het gedrag uitvoerbaar is	Help mensen geloven dat zij duurzaam zijn door ze te herinneren aan hun eerdere duurzame gedragingen
⊕ Reflectief 1	⊕ Reflectief 2	⊕ Reflectief 3	⊕ Reflectief 4
Motivatie	**Motivatie**	**Motivatie**	**Motivatie**
Vraag eerst om kleine veranderingen	Benadruk eigen voordelen	Benadruk de invloed van de gedraging	Maak invloed tastbaar
Kleine veranderingen in het gedrag kan iemands mening over de gedraging positief beinvloeden (de voet-tussen-de-deur techniek)	Benadruk positieve gevoelens, en welke voor -delen iemand zelf uit een gedraging kan halen	Help mensen geloven dat individuele acties invloed hebben	Benadruk lokale effecten en effecten in de nabije toe - komst. Gebruik visuele beelden en analogieën
⊕ Reflectief 5	⊕ Reflectief 6	⊕ Reflectief 7	⊕ Reflectief 8

25

Motivatie	Motivatie	Motivatie	Motivatie
Creëer een gevoel van hoop	Verander de context om ongewenste gewoontes te veranderen, of nieuwe gewoontes te vormen	Maak de gewenste gedraging de standaard of het makkelijkst om uit te voeren	Maak het ongewenste gedrag moeilijker om uit te voeren
Hopeloosheid kan een barière zijn voor gedragsverandering, optimisme een rede	Verwijder aanwijzingen (cues) die ongewenste gewoontes triggeren, of voeg aanwijzin - gen toe die gewenste gewoontes kunnen vormen	Dit is een van de meest effec - tieve gedragsveranderings - technieken. Zie ook techniek 12	Zie ook techniek 11
⊗ Reflectief 9	⊗ Automatisch 10	⊗ Automatisch 11	⊗ Automatisch 12

Motivatie	Motivatie	Motivatie	Motivatie
Verwoord de boodschap op een effectieve manier (framing)	Gebruik een 'schattigheidsfactor'	Creëer een gevoel van verdriet	Creëer een positief gevoel tijdens- of direct na de gedraging
Leg bijvoorbeeld de nadruk op wat verloren kan gaan, of gebruik getallen per eeuw i.p.v per jaar	Dit roept empathie op. (Bijv. beelden van schildpadden bij acties tegen plastic in de oceaan)	Dit roept empathie op. Het is het meest effectief terwijl dit gevoel ervaren wordt	Dit creëert een positieve associatie met het gedrag
⊗ Reflectief 13	⊗ Automatisch 14	⊗ Automatisch 15	⊗ Automatisch 16

Motivatie	Motivatie	Motivatie	Motivatie
Verander de grootte van benodigde middelen	Gebruik signalen om onbewust gedrag te stimuleren	Verander de presentatie	Verander hoe het product functioneert
Bijv. de grootte van donatie - containers	Bijv. pijlen of voetsporen op de grond	Verander het uiterlijk of andere sensorische factoren van producten of de omgeving om het gedrag aantrekkelijker te maken	Verander hoe iets (product, locatie, etc.) functioneert om automatisch duurzamer gedrag te creëren. Bijv. een apparaat met duurzamer verbruik
⊗ Automatisch 17	⊗ Automatisch 18	⊗ Automatisch 19	⊗ Automatisch 20

Vermogen	Vermogen	Vermogen	Vermogen
Maak het gewenste gedrag makkelijker uit te voeren of meer toeganke - lijk	Leer mensen de benodigde vaardigheden	Maak de gewenste gedraging makkelijk te begrijpen	Herinner mensen aan de gewenste gedraging
	Bijv. door workshops, video's, etc.	Maak het simpel, geef duidelijke stappen om te volgen, verkort te tijd die het kost om te begrijpen wat er verwacht wordt. De gedraging wordt zo als minder moeilijk beschouwd	Herinneringen zijn het liefst groot, duidelijk, dicht bij de locatie, en makkelijk te volgen. Mensen moeten de gedraging meteen kunnen uitvoeren na de herinnering
⊗ Fysiek 21	⊗ Fysiek 22	⊗ Mentaal 23	⊗ Mentaal 24

Vermogen	Vermogen	Vermogen	Vermogen
Geef informatie Bijv. over de negatieve invloed van het huidige gedrag, de positieve invloed van het gewen - ste gedrag, welke stappen genomen kunnen worden, etc. Informatie is het meest effectief wanneer het is aangepast aan een specifieke doelgroep, en van een betrouw bare bron afkomstig is	**Waarschuw voor onrealistisch optimisme** Bijv. "Het probleem lost zich niet vanzelf op"	**Gebruik keurmerken om informatie over te dragen** Bijv. duurzaamheids- of kwaliteitskeurmerken op producten	**Gebruik rolmodellen om informatie te verspreiden** Bijv. via sociale media
Mentaal 25	Mentaal 26	Mentaal 27	Mentaal 28

Mogelijkheid	Mogelijkheid	Mogelijkheid	Mogelijkheid
Maak de gewenste ge - draging de standaard of het makkelijkst om uit te voeren	**Zorg voor meer beschikbaarheid** Bijv. meer locaties, meer duur - zame producten, meer hulpmid - delen	**Maak de gedraging betaalbaar** Bijv. door subsidies. (Of laat zien dat het betaalbaar is)	**Maak duurzaam gedrag van anderen zichtbaar** De sociale norm kan veranderen als mensen zien dat de gedrag - ing vaak door anderen wordt uitgevoerd. Een lokale focus werkt hierbij het best
Fysiek 29	Fysiek 30	Fysiek 31	Sociaal 32

Mogelijkheid	Mogelijkheid	Mogelijkheid	
Help mensen geloven dat ze deel zijn van een duur - zame 'ingroup' Als mensen deel zijn van duur - zame (sociale) groepen, zijn ze vaker geneigd zichzelf ook duurzaam te gedragen	**Nodig vriendelijke competities tussen sociale groepen (ingroups) uit** Bijv. tussen verschillende steden of gemeentes, verschillende scholen, etc.	**Gebruik rolmodellen** Dit kan het gevoel erbij te horen door het gedrag versterken. Rolmodellen moeten vergelijk - baar zijn met- of bewonderd worden door de doelgroep. Benadruk dat het rolmodel wordt beloond voor de gedrag - ing, en dat de gedraging uitvoer -	
Sociaal 33	Sociaal 34	Sociaal 35	