SUSTAINABLE LEGACY: HOW PARENTS IN THE ACHTERHOEK REGION ARE MOTIVATED TO SAVE WATER

by

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Abstract

In the upcoming years, droughts are expected to become more frequent and severe, disrupting water availability worldwide. As fresh water supply becomes more unpredictable, reducing water consumption is crucial to mitigate shortages. This study examined how legacy motivation influences parents' intention to engage in water-saving behaviours. Specifically, it focused on parents living in the Achterhoek, Netherlands, with children aged between 0 and 18 years. Additionally, it explored the mediating role of psychological distance towards drought issues and the moderating role of self-efficacy. A survey experiment was conducted to test three hypotheses. The experimental manipulation, however, did not produce significant effects, resulting in an alternative approach towards analysing the data. While this alternative approach could not establish cause-effect relationships, it indicated that legacy motivation appears to be a significant predictor of water-saving intention. Furthermore, psychological distance appears to mediate this relationship. This suggests that parents with a strong desire to leave a positive legacy may perceive drought as an immediate concern, and thus could be more inclined to adopt water-saving behaviours. Self-efficacy seems to strengthen the positive effect of legacy motivation on water-saving intention. Given the lack of significant experimental effects, caution is needed in interpreting these results. Nevertheless, the findings highlight the potential of legacy motivation as a driver of water-saving intentions among parents, providing a theoretical foundation for future research. Moreover, this study underscores the role of intergenerational responsibility in sustainability efforts and identifies three psychological mechanisms that can inform the design of behavioural interventions.

Keywords: Legacy motivation, Water conservation, Psychological distance, Self-efficacy, Framing, Intergenerational responsibility.

Preface

In front of you is my master's thesis, titled "Sustainable Legacy: How Parents in the Achterhoek Region are Motivated to Save Water". This thesis was written as part of the MSc Communication, Health and Life Sciences, specialisation Communication and Innovation, at Wageningen University & Research. I conducted my research from September 2024 to March 2025.

Before starting my MSc thesis, I spent months searching for a topic that aligned with my interests. An article on LinkedIn about legacy motivation as a potential driver of pro-environmental behaviour caught my attention. I had never before thought about the role of legacy in terms of pro-environmental behaviour. Growing up in the Achterhoek, I have witnessed the impact of drought firsthand as well as the region's strong sense of community. I found it both relevant and meaningful to explore legacy motivation within this particular context – a rewarding challenge that also allowed me to refresh my statistical skills.

I would like to thank my supervisor, and namesake, Emma Turkenburg, for her guidance and support throughout this process. My gratitude also goes to Bregje van der Bolt for her input. I would like to thank all parents living in the Achterhoek who took the time to participate in my research.

Finally, I would like to dedicate a few words to my dog, Zusje, who unexpectedly passed away a few months ago. Although she is no longer with us, the memories of her and the positive impact she had on my family remain. Her passing reminded me how each of us, in our own way, leaves behind a legacy. Therefore, I invite you to reflect on the legacy you wish to create throughout your life because:

we all leave a legacy,
whether we realise it or not 🐾

I hope you will enjoy reading my thesis.

Emma te Pas
Wageningen, 7 March 2025

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1 Introduction

The increasing frequency and intensity of extreme weather events, such as prolonged drought, is causing fluctuating water supply worldwide (Mishra, 2023), which impacts agriculture, biodiversity and the availability of drinking water (Gornall et al., 2010; Konapala et al., 2020). Within the Netherlands, a country historically known for its water management, drought impacts are becoming increasingly visible, especially in regions such as the Achterhoek (Bonekamp et al., 2024; Philip et al., 2020).

The Achterhoek (see **Figure 1**) is located in the east of the Netherlands and covers about 1.500 km² (Achterhoek Toerisme, n.d.). The region is characterised by its sandy soils due to which water drains quickly and is hardly replenished from natural sources, such as rivers or lakes, further exacerbating drought problems (KNMI, 2019). Moreover, recent years, including 2018, 2019, 2020 and 2022, have been recorded as exceptionally dry. This poses a growing challenge to water availability in the region as diminishing water resources affect crop yields, natural habitats, and access to water for residents (Helle, 2024). According to the Royal Netherlands Meteorological Institute's (KNMI) 2023 climate scenarios, these drought problems will only worsen in the coming years in the Achterhoek as well as other regions in the east and south of the Netherlands (Bessembinder et al., 2023).

Figure 1 *Map of the Netherlands indicating the Achterhoek (Mud Sweat Trails, 2020)*

Besides climate-induced water scarcity, water demand in the Netherlands is expected to increase significantly with about 100 million cubic metres by 2030, due to economic and population growth and increasing per capita water use (Signalen Leefomgeving, 2024). As households account for almost three quarters of the Netherlands' drinking water consumption, encouraging water-saving behaviour at the household level offers opportunities to reduce pressure on limited water resources (Milieu Centraal, n.d.; Savari et al., 2022). This can be particularly valuable in drought-prone regions such as the Achterhoek.

Within households, parents of young children seem a promising target group to promote water-saving behaviour. Households with children tend to consume more water than households without children as more water is needed for e.g. washing and showering (Grespan et al., 2022; Makki et al., 2013). Furthermore, parents are not only responsible for their own consumption behaviour but also pass on environmental awareness and consumption habits to their children. As these children will eventually face the long-term consequences of climate change, the position of parents as environmental role models becomes even more important (Dewey, 2020; Masykuroh et al., 2022). Research shows that norms and values about sustainability start to develop in childhood, partly through the example set by parents (Prévot et al., 2016). By targeting water-saving interventions at parents, there is an opportunity to instil water-conscious values not only in the current generation but also in future generations, shaping children's behaviour from an early age.

But how can parents be encouraged to adopt water-saving behaviour? Understanding the deeper barriers and motivations that can influence their water-saving choices is essential for designing interventions (Antwi et al., 2021; Aslam et al., 2021). One potential motivation, particularly relevant in the context of parents' water-saving behaviour, is legacy motivation: the desire to leave a positive legacy. This motivation has been promising in stimulating pro-environmental behaviour by prompting people to consider the long-term impact of their behaviour on future generations (Syropoulos & Markowitz, 2024). Legacy motivation is an understudied concept in the social sciences with the potential to encourage new research, whose findings can motivate people to act for others beyond their own lived experiences (Waggoner et al., 2023). This motivation may be particularly relevant for parents as it aligns with their sense of responsibility for their children's well-being (Shrum, 2021; Wade-Benzoni, 2018). Thereby, this motivation plays a role in decreasing the perceived psychological distance from climate change (De Paula Sieverding et al., 2024; Massara & Severino, 2013). People often perceive climate change as an abstract and distant phenomenon, which can reduce their willingness to take climate action. However, by articulating the concrete, local consequences of climate change, such as drought impacts in the Achterhoek, the issue can feel more tangible and actionable (Essl et al., 2024). As legacy motivation inherently focuses on the future (Massara & Severino, 2013), parents' legacy motivation may influence their perception of the proximity of drought in the Achterhoek and thus intention to adopt water-saving behaviour.

While parents may be motivated and perceive drought as a tangible issue, they also need to believe that they are capable of implementing water-saving behaviour. This is where self-efficacy - the confidence in one's ability to implement sustainable behaviours - comes in. Individuals with a lack of self-efficacy may feel that their efforts are too small to make a difference, which forms a barrier to adopting water-saving behaviour (Shahangian et al., 2022; Yan et al., 2024). Convincing people that their individual actions can make a difference helps to increase their self-efficacy, and thus increase the likelihood of adopting certain behaviour (Meijers et al., 2018).

1.1 Research Aim and Research Question

The aim of this study is to investigate how legacy motivation influences the intention of parents with young children living in the Achterhoek to adopt water-saving behaviour. By investigating this specific motivation, and by looking at the additional roles of psychological distance (as mediator) and self-efficacy (as moderator), this study provides insight into three psychological mechanisms that are expected to affect water-saving intentions. The choice of young families as target group was motivated by the intergenerational responsibility that parents have towards their children, and by the potential of parents as role models within their families (Masykuroh et al., 2022; Straume, 2019). By addressing water-saving intentions at the household level in the Achterhoek as a drought-sensitive area, this study also provides practical insights for regional water management efforts. As water conservation on the household level is a key factor for sustainable water supply (Savari et al., 2022), there is considerable potential for young families to contribute to reducing pressure on water resources through water-saving behaviour. Thereby, parents have the potential to pass on environmentally conscious behaviour to their children, resulting in effects that can benefit future generations (Dewey, 2020).

The scientific value of this study further lies in discovering the connection between legacy motivation, psychological distance, and self-efficacy within the context of sustainable water use. By providing insight into the interplay between these factors and how they manifest themselves in behavioural intentions towards water-saving, this study makes a deepening contribution to the understanding of pro-environmental intentions, specifically among parents.

1.2 Report Structure

This report is structured in five chapters, including this introduction. The second chapter further dives into the role of parents in shaping pro-environmental behaviour. Furthermore, the second chapter provides a comprehensive overview of research around legacy motivation, psychological distance and self-efficacy. Three hypotheses are formulated in this chapter. Chapter three then sets out the methodological framework, explaining the choices for conducting a survey experiment, measures and ways of analysis. Chapter four presents the results of the study and discusses the influence of the studied factors on water-saving intention among parents in the Achterhoek. The fifth chapter summarises the findings, places them in a broader theoretical and practical perspective, and makes recommendations for future research.

2 Theory

This chapter first describes the role of parents in shaping pro-environmental behaviour. It then discusses framing of water-saving messages and how it is used in this study. Later on, the conceptual framework of this study is presented, including legacy motivation, psychological distance and self-efficacy as psychological motivators for water-saving intentions.

2.1 The Role of Parents in Shaping Pro-Environmental Behaviour

Climate change can be viewed as a collective action problem. This means that the effects of climate change result from an accumulation of individual actions over time and space. Hormio (2023) emphasises that climate change is too complex to be solved by a single actor, because no single individual is directly responsible for its consequences. Therefore, collective climate action is needed by different actors, including states, companies and individuals, shifting towards pro-environmental behaviour (Hormio, 2023). This study focuses specifically on individuals. But how does this shift towards pro-environmental behaviour take place at the individual level?

Research has shown that individuals who feel connected to nature, and thus have a positive relationship with it, have a greater intention to behave climate-friendly (Barrable & Booth, 2022; Mackay & Schmitt, 2019). The extent to which individuals feel connected to nature is related to both environmental identity (EID) and environmental self-identity (Balundé et al., 2019). Environmental identity refers to how strongly a person perceives him- or herself as part of the natural environment, while environmental self-identity refers more specifically to the extent to which a person perceives him- or herself as engaging in pro-environmental behaviour (Clayton & Opotow, 2003; Van Der Werff et al., 2013). Studies on environmental identity often include environmental self-identity as part of environmental identity (i.e. EID) (see e.g. Dewey, 2020; Dunlap & McCright, 2008).

Environmental identity can motivate people to care for the environment because they identify themselves as someone to whom nature is important. However, having a strong environmental identity does not automatically lead to pro-environmental behaviour. It is possible for someone to feel a strong connection to nature without this leading to climate-friendly actions (Van Der Werff et al., 2013). On the other hand, performing pro-environmental behaviour also does not directly mean that someone feels a strong connection to nature (Olivos & Clayton, 2016). Nevertheless, environmental identity is found to be a predictor of pro-environmental behaviour (Clayton & Kilinç, 2013; Dewey, 2020; Olivos & Clayton, 2016; Prévot et al., 2016). Especially if this identity is reinforced by specific pro-environmental behaviours such as recycling and reusing (Balundė et al., 2019). The next section explains how environmental identity is shaped and developed over time.

2.1.1 Formation of Environmental Identity

Environmental identity begins to form in childhood through experiences in nature, witnessing environmental degradation, parental example, and experiences at school (Dewey, 2020; Prévot et al., 2016). Direct, personal experiences with nature during childhood are seen as powerful in

forming environmental values and norms. Parental and educational modelling of environmental behaviour reinforces these processes and ensures that children develop a sense of responsibility towards nature (Dewey, 2020). These early experiences profoundly influence the environmental norms and behavioural standards adopted in adulthood (Eagles & Demare, 1999). However, identity development is not limited to childhood.

The formation of environmental identity is a dynamic process throughout life, shaped by social interactions and new experiences (Dewey, 2020; Prévot et al., 2016). As this environmental identity becomes stronger, its influence on behaviour will also increase (Dewey, 2020). After all, individuals strive for consistency in their self-image (Brekhus, 2008; Dewey, 2020), meaning that once someone perceives themselves as an environmentally friendly person, they are likely to continue engaging in pro-environmental behaviour (Stets & Burke, 2000). This self-reinforcing process makes environmental identity a key driver of consistent behaviour (Clayton & Kilinç, 2013).

The adaptability of environmental identity is particularly relevant when considering the broader ethical dimension of sustainability. A central component within sustainability definitions is that of "future generations", which points to the moral obligation of the current generation to take climate action as future generations will face significantly greater risks (Hormio, 2023; Shiel et al., 2019; Shue, 2021). Parenthood reinforces a sense of collective responsibility as parents experience an additional moral incentive to contribute to pro-environmental behaviour because of their concern for their children, who will feel the impacts of climate change more strongly (Shiel et al., 2019). Furthermore, parents often pass on their pro-environmental attitudes and behaviours to their children, which can influence how their children later transmit these values to their own children. This suggests a multigenerational transmission of environmental awareness, with children growing up now potentially making climate-conscious choices themselves in the future (Lawson et al., 2019; Nche et al., 2019). Therefore, parents can play a crucial role in climate change engagement and the transition towards a climate resilient society (Nche et al., 2019; Shrum et al., 2023). This raises the question of how interventions can be designed to appeal to parents' sense of responsibility. One possible approach lies in the way messages are framed, which brings us to the next section.

2.2 Framing Messages to Affect Water-Saving Intentions

Framing is a powerful communication tool that refers to the way information is presented, influencing individuals' perception and behaviour. A commonly known definition of framing is that of Entman (1993, p. 52): "to select some aspects of a perceived reality and make them more salient in a communicating text, in such a way as to promote a particular problem definition, causal interpretation, moral evaluation, and/or treatment recommendation for the item described". Framing plays a role in influencing water-saving intentions and behaviour by highlighting specific elements of a message. The findings by the following studies offer a few examples of how framing can be used in changing intentions and behaviour around water-saving, the pro-environmental behaviour on which this study specifically focuses.

According to Seyranian et al. (2015), framing water-saving messages in terms of specific water-saving strategies, such as reducing showering time, can encourage households to act more water-consciously. Furthermore, research by Zhuang et al. (2018) shows that messages

emphasising the immediate impact of water-saving is effective in promoting positive attitudes towards water-saving. Katz et al. (2018) found that households tend to respond best to suggestive messages ("consider saving water"), probably because a coercive tone ("you should save water") is perceived as less appropriate when it comes to behaviour around basic needs such as water use (Katz et al., 2018). The motivation to which a message appeals also plays a role: intrinsically motivated messages, such as "save water for a sustainable future", appear to contribute more strongly to water-saving behaviour than extrinsically motivated messages, such as "save water to reduce costs" (Tijs et al., 2017).

Besides the type of framing, framing an issue positively or negatively is regularly compared in the context of pro-environmental behaviour. For example, Grazzini et al. (2018) and White et al. (2011) argue that negative framing can be more effective than positive framing because it evokes a sense of urgency and responsibility among the public. At the same time, other studies, such as Hurlstone et al. (2020) and Spence & Pidgeon (2010), emphasise that positive framing - by highlighting benefits and outlining a desirable future - can also effectively promote behavioural change. Ahn et al. (2015) and Essl et al. (2024) reported no difference between positive and negative frames. These inconsistent results may be partly explained by the variability in the study designs, as recently discussed by Essl et al. (2024). Therefore, it is possible that the way framing is induced in studies, e.g. through text, image or video, influences its impact on research findings, which is important to be aware of.

This study's aim is to investigate whether a message appealing to parents' legacy motivation is more effective in encouraging water-saving intentions than when drought is just presented as a growing problem. In order to do so, it uses framing to communicate drought as an increasingly prominent problem in the Achterhoek, either with or without reference to parents' legacy motivation. This study thus uses framing as a practical tool to design two experimental conditions. More information about the experimental conditions can be found in section 3.5 "Stimulus Material".

2.3 Psychological Motivators for Water-Saving Intentions

As discussed earlier, parents are a particularly relevant target group for promoting sustainable water use, given their sense of responsibility for their children's future and because they act as role models within their families (Masykuroh et al., 2022; Shrum, 2021; Wade-Benzoni, 2018). Thereby, message framing can be a useful tool to communicate about water conservation. A key question that follows is: which psychological motivators can help encourage parents to save water?

This section introduces three psychological motivators that are expected to influence parents' water-saving intentions: legacy motivation, psychological distance, and self-efficacy. Specifically, legacy motivation - the desire to leave a positive legacy - may be a key driver of water-saving intentions. Psychological distance is expected to serve as a mediator, explaining how legacy motivation relates to water-saving intention, while self-efficacy may act as a moderator, influencing the strength and direction of the relationship between legacy motivation and water-saving intention. **Figure 2** shows the conceptual model used in this study, which integrates the mentioned psychological motivators and connects them to three hypotheses. The following sections further discuss this conceptual model.

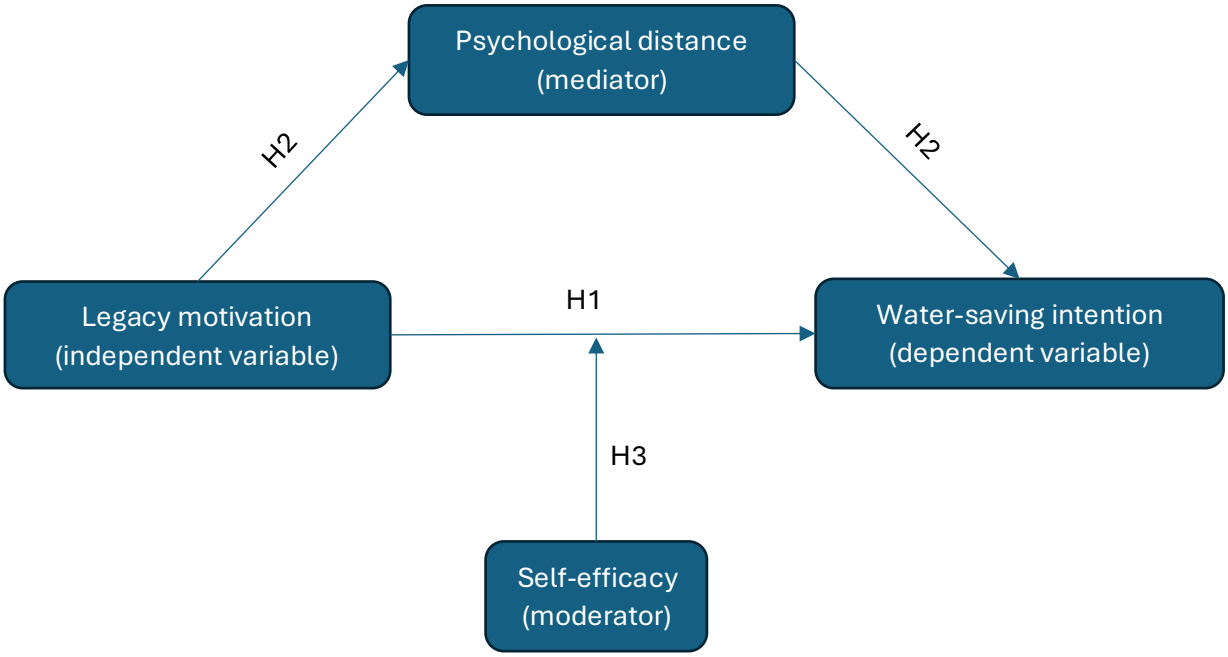

Figure 2 *Conceptual model*

2.3.1 Legacy Motivation as Predictor of Water-Saving Intentions

In the context of climate change, present bias plays a central role in the lack of pro-environmental behaviour. Naturally, people prefer activities with immediate benefits over long-term outcomes, making climate-friendly choices less attractive because of their delayed and often uncertain effects (Essl et al., 2024; Zaval et al., 2015). This uncertainty acts as a barrier to pro-environmental behaviour, especially for individuals suffering from climate anxiety, who tend to focus more on the present rather than future consequences (Qin et al., 2024).

However, legacy motivation - "how will I be remembered" - can be a strong stimulus to undertake action in the present that might provide something positive for others in the future (Zaval et al., 2015). By increasing the sense of connection between current and future generations, legacy motivation strengthens feelings of responsibility to protect future generations and thus intergenerational commitment (Shrum et al., 2021; Syropoulos & Markowitz, 2024). Moreover, as we age and have children, our concern for future generations often increases as does the desire to leave a positive legacy (Shiel et al., 2019).

Legacy motivation is found to be an important predictor of pro-environmental behaviour (Syropoulos et al., 2023) as it drives pro-social decisions related to future generations (Fox et al., 2010; Wade-Benzoni, 2019), especially within the context of climate change (Bang et al., 2017; Hurlstone et al., 2020; Shrum, 2021; Wickersham et al., 2020; Zaval et al., 2015). Studies have shown that individuals with high legacy motivation exhibit stronger pro-environmental attitudes and behaviours, including a greater willingness to make sacrifices for future generations (Watkins & Goodwin, 2020; Zaval et al., 2015). Moreover, interventions that encourage individuals to reflect on their legacy, such as writing letters to future generations, have been shown to increase pro-environmental intentions (Syropoulos & Markowitz, 2024). Therefore, making people think about their own legacy can encourage them to make climate-friendly choices that are beneficial for future generations (Syropoulos et al., 2023; Zaval et al., 2015).

An important dynamic within legacy motivation is intergenerational reciprocity. When people recognise the benefits they have inherited from past generations, they are more inclined

to preserve or enhance resources for future generations (Bang et al., 2017; Wade-Benzoni, 2018; Watkins & Goodwin, 2019). Awareness of this intergenerational continuity promotes stewardship, with people who view their actions as part of a lasting legacy being more likely to engage in pro-environmental behaviours (Bang et al., 2017; Wade-Benzoni, 2018). In addition, the prospect of leaving a negative legacy, such as a poor environment, can serve as a moral deterrent, motivating people to adopt more sustainable practices as they seek to leave a positive impact on future generations (Wade-Benzoni et al., 2010; Wade-Benzoni, 2018). In doing so, legacy motivation bridges the gap left by present bias, encouraging people to set aside short-term interests for the sake of a meaningful, long-lasting impact.

A relevant life stage for legacy motivation is parenthood. Parenthood fosters legacy motivation as parents often feel a strong responsibility to raise their children in a safe and healthy environment (Cripps, 2017; Gheaus, 2016; Shrum, 2021). Research further shows that parents, especially mothers, pass on environmental concerns and values to their children, which can then motivate these children to make their own sustainable choices in the future (Pratt et al., 2013; Shrum et al., 2023). All in all, through its link with legacy motivation, parenthood can significantly impact the intention of both parents themselves and their children to adopt pro-environmental behaviour (Shrum, 2021).

To my knowledge, no study has specifically examined the relationship between legacy motivation and water-saving intentions. Given the increasing pressure on water resources due to climate change, saving water is crucial for maintaining a liveable environment (Helle, 2024; Konapala et al., 2020). Based on existing evidence regarding legacy motivation, parenthood and intention towards pro-environmental behaviour (Bang et al., 2017; Shrum, 2021; Syropoulos & Markowitz, 2024; Watkins & Goodwin, 2020; Zaval et al., 2015), this study expects that parents with a strong legacy motivation are more likely to reduce their water consumption as a contribution to future generations. Therefore, the following hypothesis is posed:

H1: There is a positive effect of legacy motivation on water-saving intention; higher legacy motivation among parents leads to a stronger intention to save water.

2.3.2 Psychological Distance as Mediator

Besides present bias, a second barrier to pro-environmental behaviour is that climate change is often seen as an abstract phenomenon that does not directly affect people's daily lives. This perceived psychological distance can reduce people's sense of urgency and personal relevance regarding environmental issues, thus hindering pro-environmental behaviour such as water-saving (Essl et al., 2024; Lee et al., 2020).

One way of bringing climate change closer to people, and thereby stimulating pro-environmental behaviour, is future-oriented thinking (Essl et al., 2024; Lee et al., 2020). Episodic Future Thinking (EFT), for example, allows people to project themselves into the future and experience certain events in advance. EFT has been shown to evoke more concrete mental representations of climate disasters, increasing people's climate risk perception and promoting pro-environmental behaviour (Lee et al., 2020). Similarly, making climate change

more tangible through either positive or negative future scenarios was found to encourage pro-environmental behaviour (Essl et al., 2024).

The abovementioned effects can be explained by Construal Level Theory (CLT, see **Figure 3**), which states that the way individuals perceive and engage with events depends on how distant they feel to those events. The further away an event feels in terms of time, space, social distance or probability, the more abstractly we perceive it (Trope & Liberman, 2010). In contrast, reducing this distance encourages more concrete thinking, making events more urgent and actionable (Liberman & Trope, 2008). Therefore, the level of psychological distance determines whether people are more likely to think about events in general terms, such as "drought", or in practical, everyday actions, such as "not being able to water the garden", which can help to better understand and influence specific behaviour (Liberman & Trope, 2008; Trope & Liberman, 2010).

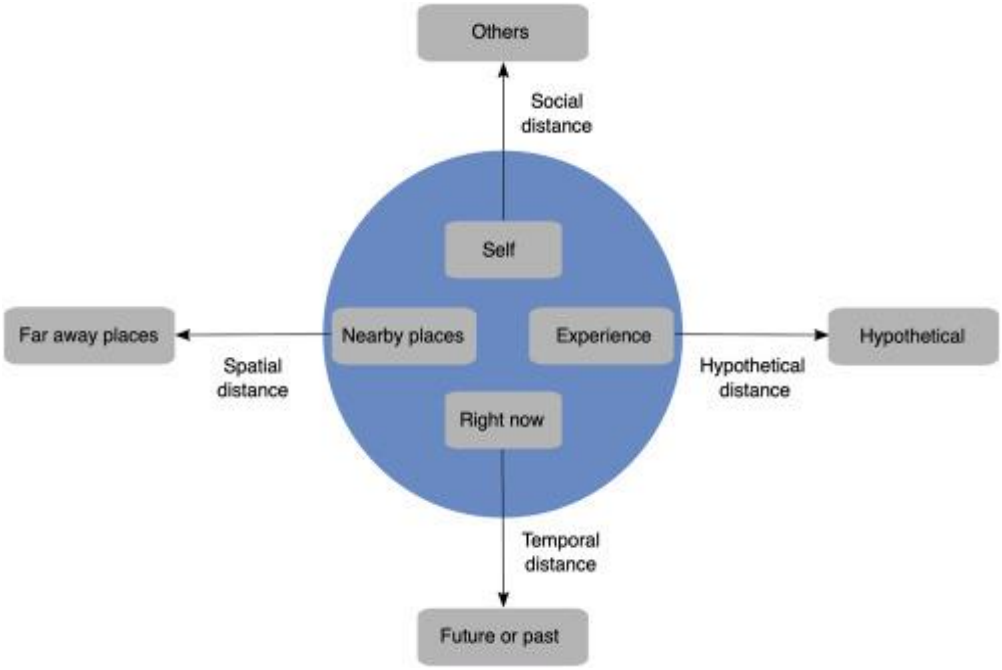

Figure 3 *The four dimensions of Construal Level Theory (Wang et al., 2021)*

Previous studies suggest that legacy motivation helps to reduce the psychological distance to future climate impacts (De Paula Sieverding et al., 2024; Zaval et al., 2015). When people reflect on their legacy, they become more aware of the impact of their current behaviour on future generations, making pro-environmental actions a form of intergenerational responsibility (De Paula Sieverding et al., 2024; Waggoner et al., 2023). Thereby, De Paula Sieverding et al. (2024) found that the closer the bond between different generations, the lower the psychological distance and the greater the willingness of the older generations to adopt pro-environmental behaviour (Paula Sieverding et al., 2024).

Furthermore, a reduction in psychological distance has been linked to increased water-saving intentions as water scarcity is then perceived as a more urgent and personal issue (Sanchez et al., 2023; Seyranian et al., 2015). According to CLT, issues viewed as psychologically close, such as daily water-saving actions, are perceived as more concrete and urgent than more abstract, distant problems such as drought (Sanchez et al., 2023; Wolters, 2013). Therefore, to stimulate water-saving behaviour, it is important to reduce the

psychological distance people experience towards drought. Households that receive information about the direct consequences of water scarcity in their own region, along with concrete water-saving strategies, feel more motivated to take action (Sanchez et al., 2023; Seyranian et al., 2015). Furthermore, households in regions that had recently experienced drought and associated restrictions on water use, consumed less water than households that had less direct experience with drought. This suggests that direct experiences reduce psychological distance and increase water-saving behaviour (Fielding et al., 2012). Reducing psychological distance towards water-saving also offers opportunities to bridge the so-called intention-behaviour gap: by lowering the psychological distance, intentions towards water-saving can be better converted into action (Sanchez et al., 2023). Communicating specific local impacts of drought and clear instructions on practical water-saving measures, such as rainwater harvesting, can make drought problems more tangible and encourage people to take action (Sanchez et al., 2023). However, it is important to take individual differences into account when designing such interventions to reduce psychological distance (Duan et al., 2021; Wolters, 2013; Sanchez et al., 2023).

This study aims to contribute to the field by investigating the potential mediating role of psychological distance between legacy motivation and water-saving intentions. Given the link between legacy motivation and psychological distance, it is likely that parents with strong legacy motivation are more aware of drought as a relevant problem for themselves and their children. Based on existing evidence with regards to psychological distance and water-saving, this closer perception of drought is expected to translate into stronger water-saving intentions. Therefore, the following hypothesis is posed:

H2: Psychological distance acts as mediator between legacy motivation and water-saving intention; legacy motivation fosters a closer perception of drought problems among parents, which then leads to a stronger intention to save water.

2.3.3 Self-Efficacy as Moderator

A third major barrier to pro-environmental behaviour is ecological paralysis, where individuals feel powerless in the face of climate change. Many people believe that their individual actions have little impact and do not matter, leading to feelings of guilt, fear and apathy (Meijers et al., 2018). This sense of powerlessness is common when people are confronted with the immense magnitude of climate change. Instead of engaging in pro-environmental behaviour, they tend to adopt a more indifferent attitude (Peters et al., 2024; Qin et al., 2024). Just as ecological paralysis can prevent broader climate actions, it can also discourage specific water-saving actions within households (Addo et al., 2018b; Shahangian et al., 2022).

Ecological paralysis is closely tied to self-efficacy, the belief in one's ability to perform certain behaviour. Self-efficacy plays a crucial role in determining whether individuals adopt specific behaviours. Individuals are more likely to adopt a particular behaviour, such as water-saving, when they believe that they are able to implement the behaviour successfully (Coetzer-Liversage et al., 2024; Yan et al., 2024). Therefore, increasing self-efficacy is key to overcoming ecological paralysis as it helps people recognise that their individual behaviour matters (Meijers et al., 2018; Qin et al., 2024).

Self-efficacy plays a central role in promoting water-saving behaviour within households. Multiple studies show that individuals with a greater sense of control over their water consumption are more likely to adopt water-saving behaviour (Addo et al., 2019; Coetzer-Liversage et al., 2024; Shahangian et al., 2022). Households that are provided with specific strategies, such as reducing shower time, turning off the tap when brushing teeth, and only doing full loads of washing, have a greater concern about water scarcity and a stronger intention to save water (Addo et al., 2019; Seyranian et al., 2015). Communicating such strategies enhances self-efficacy by providing households a concrete framework for action (Addo et al., 2019). Additionally, interventions that provide feedback on the results of water-saving actions - such as the amount of water saved after shorter showers - reinforces the belief that water-saving provides tangible benefits, increasing self-efficacy and motivation to take further action (Addo et al., 2018a; Sanchez et al., 2023).

Beyond individual actions, household dynamics can influence the success of water-saving initiatives. Since water use in households is often a collective behaviour, involving all family members in water-saving actions creates a shared sense of control and responsibility (Fielding et al., 2012). Thereby, experiencing success in simple water-saving behaviours increases people's confidence in future water-saving actions (Lauren et al., 2016; Russell & Knoeri, 2020). Demographic factors such as gender, income level and education level also play a role in the capacity of households to implement water-saving measures. Specifically, women and highly educated households may experience higher self-efficacy, making them more likely to adopt water-saving habits (Addo et al., 2018a). All in all, self-efficacy appears essential for long-term changes in water use as households that are confident in their capacity to save water are better able to adopt new, more complex water-saving habits (Lauren et al., 2016; Russell & Knoeri, 2020; Straus et al., 2016).

In light of the aim of this study, how strongly legacy motivation influences parents' water-saving intentions may be affected by one's self-efficacy. As explained, research shows that higher self-efficacy is associated with increased water-saving intentions as people then feel able to take action themselves (Addo et al., 2019; Coetzer-Liversage et al., 2024; Shahangian et al., 2022). While legacy motivation can encourage individuals to leave a positive impact on future generations (Zaval et al., 2015), motivation alone does not always lead to action. Individuals need a sense of agency, a belief that they can effectively implement water-saving behaviour. If not, motivated individuals may struggle to take action because they lack the confidence to implement water-saving measures (Addo et al., 2019; Coetzer-Liversage et al., 2024; Shahangian et al., 2022). This suggests that self-efficacy not only directly influences intentions but can specifically enhance or weaken the effect of motivation on intentions. Therefore, the extent to which legacy motivation translates into actual water-saving intentions may depend on parents' self-efficacy. It is expected that parents with strong legacy motivation and high self-efficacy will feel better able to contribute to their legacy through water-saving behaviour, which may strengthen their water-saving intentions. This leads to the following hypothesis:

H3: Self-efficacy moderates the relationship between legacy motivation and water-saving intention; among parents with a higher sense of self-efficacy, the positive effect of legacy motivation on water-saving intention will be stronger.

3 Methodology

3.1 Experimental Design

This study aims to investigate how legacy motivation influences parents' intention to save water (H1). It also examines how psychological distance from drought in the Achterhoek acts as mediator between parents' legacy motivation and their intention to save water (H2), as well as how self-efficacy moderates the relationship between legacy motivation and water-saving intention (H3). To achieve these three research aims, a survey experiment is conducted. A survey experiment is a research design in which data is collected at a single point in time. It is time- and cost-efficient, with a lower chance of participant dropout compared to longitudinal research (Setia, 2016). It is an appropriate method to examine relationships between different variables within a specific group (Druckman, 2022), and thus suitable for this study.

This study made use of a three level factorial between-subjects design. Participants were randomly assigned to three experimental conditions, showing them different posters as manipulations. The experimental conditions were defined as follows:

a. Condition 0: the control condition in which no poster is shown;
b. Condition 1: the legacy motivation condition in which participants are shown a poster that emphasises the importance of household water-saving for future generations;
c. Condition 2: the living environment condition in which participants are shown a poster that emphasises the importance of household water-saving for our living environment.

More information about the experimental conditions can be found in section 3.5 "Stimulus Material". Before explaining the experimental procedure, more context is provided on the specific case of this study.

3.2 Case

The Achterhoek, located in the east of the Netherlands (see **Figure 1** in the introduction), is characterised by an agricultural landscape, villages and greenery (Provincie Gelderland, 2022). As of January 2024, the region had around 300.000 inhabitants (Haggeman, 2024).

In recent years, the Achterhoek has increasingly faced decreasing groundwater levels, making drought problems an urgent issue on the policy agenda (Provincie Gelderland, 2022). The Rijn and IJssel water board, which operates in this region, plays a crucial role in developing and implementing climate adaptive measures, such as longer water retention and smarter drainage during excessive rainfall (Waterschap Rijn en IJssel, n.d.). The urgency of drought issues, considering the future, makes the Achterhoek a suitable case for research into water-saving intentions. Besides the ecological challenges, the Achterhoek is known for its strong sense of community ("'t Noaberschap") and regional identity (Erfgoed Gelderland, 2024). This offers opportunities to focus interventions on collective values, such as care for future generations, which this study looks at.

The Achterhoek region consists of eight municipalities: Aalten, Berkelland, Bronckhorst, Doetinchem, Montferland, Oost Gelre, Oude IJsselstreek and Winterswijk. The city of Doetinchem is often seen as 'the capital of the Achterhoek' (VVV Doetinchem, n.d.). However, the borders of the Achterhoek are not strictly defined and municipalities in the nearby

region of the Liemers are considered by some to be part of the Achterhoek. Historically, the river Oude IJssel forms the border with the Liemers but this does not always correspond to the perceptions of residents themselves. Which places belong to the Achterhoek and which to the Liemers has been a discussion for many years (De Gelderlander, 2017), and there is contradicting information about it. Therefore, this study included participants living in the dubious municipalities, such as Lochem and Zutphen (see **Figure 4**), as long as they indicated that they feel connected to the Achterhoek. By collecting data specifically for the Achterhoek region, the outcomes of this study could be useful for regional policymakers and campaigners, such as the Rijn and IJssel water board and municipalities.

Figure 4 *Map indicating the municipalities included in this study (NPZ Achterhoek en regio Zutphen, n.d.)*

3.3 Sample

The target group of this study consists of parents living in the Achterhoek who have children aged between 0 to 18 years. Aside from its relevance, as explained in the introduction and theory, it was also deliberately chosen not to include individuals without children or with a desire to have children because of the sensitivities surrounding parenthood and family planning. Making this choice avoids potential emotional strain on participants and allows the study to focus specifically on how legacy motivation within parenthood influences water-saving intentions.

Data were collected between 06-12-2024 and 06-01-2025 (1 month, N = 216) in the Achterhoek region, Netherlands. Participants were recruited though Instagram, Facebook, LinkedIn and personal network. In addition, parents were encouraged to participate in this study

through the neighbourhood app NextDoor, in which the survey is posted in diverse neighbourhoods in the Achterhoek. See **Appendix B** for the recruitment text and poster used. Participants who did not give informed consent were excluded from the sample. Same goes for participants that answered not to live in the Achterhoek and/or not to have children. They got a notification thanking them for their interest but saying that they could not participate in this particular study. Participants who met the above criteria but did not complete the survey were also excluded. This led to the exclusion of data from 41 out of the 216 respondents, resulting in a final sample of N = 175 used for further analysis. It was chosen to include respondents who failed the attention check for the first time (N = 6) in the final sample as there were no substantial differences in results when they were excluded.

The final sample has a mean age of 44.97 years with a minimum age of 26 years and a maximum age of 72 years. Most participants are female (73.1%), highly educated (61.7%) and have two or three children (respectively 52.6% and 25.1%). A detailed overview of the demographic composition of the sample can be found in **Appendix C**, Table C2.

3.4 Procedure

All data were collected via an online questionnaire (see **Appendix A** for the full questionnaire), which was made and distributed via Qualtrics. This platform was chosen for its user-friendly interface and ability to randomly assign conditions. A pre-test was conducted among 15 participants in the personal network to check whether the manipulations and survey questions were clear. After some minor adjustments, the questionnaire was ready to be distributed to the target group.

The collected data were used anonymously only for the purpose of this study. Thereby, informed consent is sought from participants at the beginning of the questionnaire and they could withdraw from the questionnaire at any time. After that, demographic information about the participant is asked, including age, gender and living environment. The questionnaire continues with measuring participants' self-efficacy regarding water-saving behaviours, and demographic information about their children (how many children, and age of the oldest child). Subsequently, after the attention check, participants were randomly assigned to one of the three experimental conditions (*condition 0* N = 61, *condition 1* N = 57, *condition 2* N = 57). After having checked whether participants saw a poster and, if yes, whether the poster was visible, participants' psychological distance regarding drought in the Achterhoek as well as their water-saving intentions were measured. Their legacy motivation was also measured, followed by a manipulation check. Lastly, there was a debriefing after which participants had the option to fill in their email address for a chance to win a gift voucher of €10 and any comments/questions they had about this study.

3.5 Stimulus Material

The stimulus materials used in this study are two posters (see **Figure 5** and **Figure 6**) in experimental condition 1 and 2. Experimental condition 0 was the control condition, which did not include any poster.

The reason behind presenting a visual poster is that visual stimuli are powerful tools for better message retention. Visual information evokes an emotional appeal and is easier to consume than text. Therefore, combining text with visuals improves information recall and ensures that the message is remembered longer (Pati & Kumar, 2023). In the context of this study, the posters in condition 1 and 2 are expected to make the drought issue in the Achterhoek more immediate and concrete for participants. Moreover, by framing legacy motivation in experimental condition 1, participants are encouraged to think about water-saving in terms of benefits for future generations.

The images on the posters are created using Krea.ai and thus not real images. Furthermore, the sender featured on the posters ("Spaar Je Water") is a fictitious organisation that does not exist, as does the website referred to on the poster ("spaarjewater.nl"). The logo of the organisation is self-designed using the design tool Figma. Both posters show drought problems in the Achterhoek through an arid landscape and dry stream, together with the text "The Achterhoek is becoming drier" with the Achterhoek flag attached. In addition, both posters encourage action through the phrase "Join in saving water at home". The manipulation is in the textual message about who or what is protected by participating in water-saving at home, and the people displayed on the posters. The difference in visual elements alongside textual elements was deliberately chosen to get a clear distinction between the legacy motivation condition (1) and living environment condition (2).

The first poster (condition 1, **Figure 5**) shows a young family walking through the arid landscape in the Achterhoek region. In addition, the poster contains the text "Join in saving water at home and protect *the future of our children*". By showing a young family and using the words "the future of our children", viewers are primed on their legacy motivation. Therefore, the poster emphasises the importance of saving water at home for future generations.

The second poster (condition 2, **Figure 6**) shows a young couple without children walking through the arid landscape in the Achterhoek region. The poster contains the text "Join in saving water at home and protect *our living environment*". This poster is the living environment condition, with no visual and textual reference to future generations. Therefore, the poster emphasises the importance of saving water at home for our living environment.

Figure 5 *Condition 1 (legacy motivation)*

Figure 6 *Condition 2 (living environment)*

3.6 Measures

3.6.1 Self-Efficacy

Self-efficacy was measured to determine the extent to which participants are confident in their own ability to take water-saving measures. Participants rated four statements on a 7-point Likert scale (1 "Strongly disagree" to 7 "Strongly agree"): *I am confident that I can reduce my water use*; *I know what I can do to save water in my household*; *It is easy for me to save water*; *If I want to, I can take action to reduce my water use*. The items are based on previous studies on self-efficacy in the context of water-saving behaviour (Addo et al., 2019; Coetzer-Liversage et al., 2024). The scale was reliable although weaker than the other item scales. Overall, participants expressed a moderate to high level of self-efficacy ($M = 4.9$, $SD = 0.9$, $\alpha = 0.63$).

3.6.2 Psychological Distance

Psychological distance towards drought problems in the Achterhoek region was measured with four statements assessing temporal, social, geographical and hypothetical proximity based on Duan et al. (2021) and Jones et al. (2016). Participants scored their level of agreement on a 7-point Likert scale (1 "Strongly disagree" to 7 "Strongly agree"): *For me, the consequences of drought in the Achterhoek feel like something happening in the distant future* (temporal); *The consequences of drought in the Achterhoek have a negative effect on people like me* (social); *I notice the consequences of drought in the Achterhoek directly in my environment* (geographical); *I expect future drought in the Achterhoek to have a negative effect on my daily life* (hypothetical). The scale was reliable ($M = 4.1$, $SD = 1.3$, $\alpha = 0.80$), with first item on temporal psychological distance being reverse-coded.

3.6.3 Water-Saving Intention

Water-saving intentions were measured to investigate how motivated participants are to actively save water in their households. Four statements were used for this purpose, rated on a 7-point Likert scale (1 "Strongly disagree" to 7 "Strongly agree"): *I plan to reduce my water use from now on*; *I want to try to be more water conscious, e.g. by showering for shorter periods of time or turning off the tap while brushing my teeth*; *I plan to use water-saving appliances or programmes, such as the eco programme on the dishwasher or washing machine*; *I want to start collecting and reusing water, e.g. for gardening or cleaning*. The statements are based on previous research on water-saving intentions (Addo et al., 2019; Coetzer-Liversage et al., 2024; Fielding et al., 2012). The scale was reliable and participants generally showed moderate intention to save water in their household ($M = 4.3$, $SD = 1.3$, $\alpha = 0.79$).

3.6.4 Legacy Motivation

Legacy motivation was measured to assess participants' motivation to leave a positive impact for future generations in the Achterhoek region. Participants rated four statements on a 7-point Likert scale (1 "Strongly disagree" to 7 "Strongly agree"): *I want my choices now to contribute to a better future for the generations that come after me*; *I think it is important to leave*

something positive for the generations that come after me; *I value what the generations that come after me will think about me as a person*; *I want to prevent my choices from having a negative impact on the generations that come after me*. The statements are based on previous research on legacy motivation (De Paula Sieverding et al., 2024; Syropoulos et al., 2023; Zaval et al., 2015). The scale was reliable and participants generally reported relatively high legacy motivation ($M = 5$, $SD = 1.2$, $\alpha = 0.85$).

3.6.5 Manipulation Checks

To check whether the experimental manipulation was successful, participants were asked if they had seen a poster (0 = No, 1 = Yes). Furthermore, when participants indicated that they had seen a poster, they were asked what the main message was on the poster they saw (1 = focus on future generations, 2 = focus on living environment, 3 = other). This question was incorporated to specifically check whether the legacy manipulation in condition 1 was successful.

3.6.6 Attention Check

Before showing participants one of the posters, their attention was checked by asking them to click on the answer option "Totally disagree". If participants answered this question incorrectly, they were shown a warning: *Please note that the previous question was asked to check whether you read the questionnaire carefully. Please answer the question again below*. After this warning, participants could answer the same question again.

3.6.7 Control Variables

Several control variables have been included in this questionnaire (see **Appendix A** for full details) to receive demographic and contextual information from the participants. This helps in the interpretation of the results as the information is used to check for randomisation.

Participants' age, gender, education level, living environment and level of environmental awareness were asked. Additionally, participants indicated whether they live in the Achterhoek or feel connected to the region. This served as a screening question as this study specifically focuses on this geographical context. To exclude non-parents from further analyses, a question was incorporated asking for the number of children participants have. Lastly, participants specified the age of their child. In the case of multiple children, only the age of the oldest child was asked to simplify the analysis and maintain consistency in the dataset.

3.7 Analysis

R Commander (Rcmdr) is used to analyse the data. The raw data were downloaded as an Excel file containing values from Qualtrics. Then the data were cleaned, with incomplete responses stored in a separate tab, and ordered by experimental condition (0, 1, 2). Furthermore, one variable was created out of the four items per concept (i.e. self-efficacy, psychological distance, water-saving intention, and legacy motivation) by calculating the mean score on the items per respondent, resulting in four new variables:

1. Mean self-efficacy (*se_mean*);
2. Mean psychological distance (*pd_mean*);
3. Mean water-saving intention (*ws_mean*);
4. Mean legacy motivation (*lm_mean*).

The internal consistency of the items was tested using Cronbach's alpha. This provides an indication of the reliability of the scales used. A Cronbach's alpha of 0.60 or higher was considered acceptable (Hajjar, 2018). The results of these analyses are presented in section 3.6 "Measures" as well as in **Appendix C**, Table C1.

As for H1, ANCOVA and post-hoc tests were conducted in Rcmdr to test the direct effect of the experimental conditions on *ws_mean*, and to evaluate differences between the three experimental conditions. For the post-hoc tests, the Tukey HSD method was used to compare all pairs of experimental conditions while controlling for Type I errors. Although Tukey HSD is often categorised as a post-hoc test, it does not necessarily require a significant omnibus test such as ANCOVA to be valid. Its robustness to normality violations makes it an appropriate choice for this study (Lane, 2010).

A mediation analysis was conducted for H2 to test the role of *pd_mean* as mediator between the experimental conditions and ws_mean. Mediation was tested using PROCESS Model 4 in Rcmdr with 5000 iterations (Hayes, 2022). This method was chosen because it is more sensitive in detecting mediation effects than Baron and Kenny's (1986) traditional causal step method. Moreover, it does not rely on the assumption that there must be a significant direct relationship between the independent variable and the mediator, making it a more versatile method (Hayes, 2009).

Lastly, for H3, a moderation analysis was conducted in Rcmdr to examine whether *se_mean* enhances the relationship between the experimental conditions and ws_mean. Moderation was evaluated by adding an interaction term (*condition*se_mean*) to the regression model.

3.7.1 Alternative Approach: Second-Time Hypothesis Testing

Important to note is that the manipulation check (see section 4.2) revealed that the experimental manipulation did not produce clear differences in participants' legacy motivation. This limitation provided an opportunity to reassess the hypotheses using an alternative approach.

Initially, the experimental conditions were used as the independent variable to examine their impact on water-saving intention (H1), test the role of psychological distance as a mediator (H2), and explore the role of self-efficacy as a moderator (H3). However, due to lack of significant differentiation between the experimental conditions (see section 4.2), it was decided to replace the independent variable with mean legacy motivation (*lm_mean*) and retest the hypotheses. In this alternative approach, the data were treated as survey data rather than experimental data. As for H1, a linear regression was conducted to investigate the relationship between *lm_mean* and water-saving intention as this method is suitable to assess associations between continuous variables, without the need for experimental group comparisons.

The choice to re-run the analyses with *lm_mean* as the independent variable allowed for an exploration of the connections between legacy motivation, water-saving intention, psychological distance, and self-efficacy, regardless of the experimental manipulation. This

provided a more direct test of the hypotheses as it removed reliance on the experimental conditions. Conducting the analyses again with *lm_mean* added significant value to this study as it provided deeper insights into the factors influencing water-saving intentions and reinforced the conceptual framework central to this research.

For clarity, Chapter 4 on "Results" first describes the analyses using the experimental conditions as independent variable, referred to as "Main Approach" (sections 4.3, 4.4 and 4.5). Next, the analyses are described using *lm_mean* as independent variable, referred to as "Alternative Approach" (sections 4.6, 4.7 and 4.8). In this alternative approach, the experimental conditions are included as control variables.

4 Results

4.1 Randomisation Check

Analysis of variance (ANOVA) and chi-square test results indicated that randomisation was successful for most variables across the three experimental conditions ($p > .05$). However, there are significant differences in two variables: the age of parents (F (2, 172) = 3.81, p = .024) and the age of their (oldest) child (F (2, 172) = 3.75, p = .025). Therefore, parents' age and the age of their (oldest) child were included as covariates in further analyses to control for these variables.

To investigate which experimental conditions differ significantly in age, post-hoc tests were conducted. These showed that there is a significant difference in parents' age between experimental condition 2 and condition 0 (p = .020). Parents in condition 2 are on average 4.06 years younger than those in condition 0. No significant differences in parents' age were found for the other comparisons between conditions. For the age of their (oldest) child, a significant difference was found between condition 1 and condition 0 (p = .049). Children in condition 1 are on average 2.32 years younger than those in condition 0. Furthermore, the difference between condition 2 and condition 0 (p = .053) approached significance. Children in condition 2 are on average 2.29 years younger than those in condition 0. A full overview of the randomisation check can be found in **Appendix C**, Table C2 and C3.

4.2 Attention and Manipulation Checks

Most participants (N = 169; 96.6%) passed the attention check the first time. The other participants (N = 6; 3.4%) passed the attention check the second time.

The experimental manipulation was checked by investigating the number of participants who correctly answered to have seen a poster and which poster in the respective condition. Of the participants in condition 1 (N = 57) and condition 2 (N = 57) in which a poster is shown, respectively 89.5% and 93.0% correctly answered to have seen a poster. Furthermore, of the participants in condition 1 (*legacy motivation*) who answered that they had seen a poster, 66.7% correctly indicated that they had seen a poster with a focus on future generations. Of the participants in condition 2 (*living environment*) who answered that they had seen a poster, 94.3% correctly indicated that they had seen a poster with a focus on living environment. Both percentages include some participants who used the answer option "other" but seemed to understand the main focus of the poster in either condition 1 or condition 2 based on their explanation. Of the participants in the control condition in which no poster is shown (*condition 0*, N = 61) 96.7% correctly answered not to have seen a poster.

To further check the experimental manipulation, an ANCOVA was performed to identify differences in legacy motivation between the conditions, while controlling for parents' age and child's age. The results showed a marginally significant effect of experimental condition on legacy motivation (F(2, 170) = 2.42, p = .092). Post-hoc comparisons using Tukey HSD revealed that the difference in legacy motivation between condition 0 and condition 1 was almost significant (p = .061). No significant difference was found between condition 0 and

condition 2 (p = .104) and between condition 1 and condition 2 (p = .974) (see also **Appendix C**, Table C5).

Interestingly, the mean legacy motivation was higher in Condition 1 (M = 5.24, SE = 0.16) and Condition 2 (M = 5.19, SE = 0.16) compared to Condition 0 (M = 4.72, SE = 0.16). The higher mean scores in condition 1 and condition 2 compared to condition 0 (see **Figure 7**) suggest that viewing a poster may have had some influence on participants' legacy motivation. Since the differences in mean legacy motivation between the three conditions were not significant, it is likely that the experimental manipulation was too weak. This limitation affects the interpretation of the results for the hypotheses.

As explained in section 3.7.1 on using an alternative approach to test the three hypotheses, the sections below first describe the analyses with the experimental conditions as independent variable ("Main Approach": sections 4.3, 4.4 and 4.5). Then the analyses are described with mean legacy motivation as independent variable and experimental conditions as control variable ("Alternative Approach": sections 4.6, 4.7 and 4.8). For the re-analyses in these sections, the data were treated as survey data rather than experimental data. This was done because the experimental manipulation did not produce clear differences in mean legacy motivation.

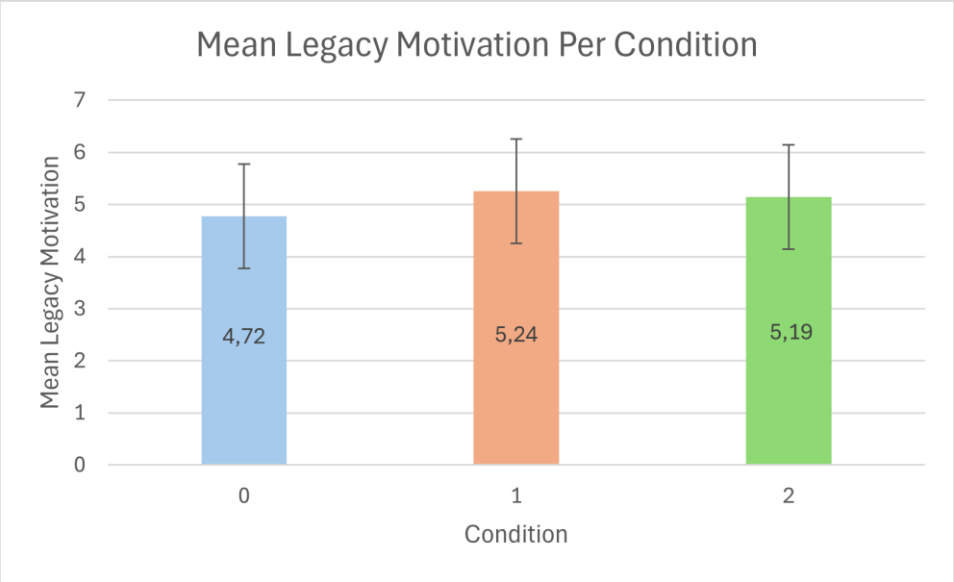

Figure 7 *Mean legacy motivation across conditions*

4.3 **Main Approach:** Direct Effect

H1 was tested using a ANCOVA in which the experimental conditions were used as independent variables, water-saving intention as dependent variable and parents' age and child's age as covariates. Furthermore, Tukey post-hoc tests were conducted.

The ANCOVA showed no significant effect of experimental condition on water-saving intention: $F(2, 170) = 1.23$, $p = .296$. Additionally, parents' and child's age had no significant effect on water-saving intention ($p = .115$ and $p = .600$, respectively).

While the mean water-saving intention was slightly higher in condition 1 ($M = 4.52$, $SE = 0.17$) and condition 2 ($M = 4.41$, $SE = 0.17$) compared to condition 0 ($M = 4.12$, $SE = 0.17$) (see **Figure 8**), post-hoc comparisons revealed no significant differences in water-saving intention between any of the conditions. Specifically, the differences between condition 0 and condition 1 ($p = .219$) and between condition 0 and condition 2 ($p = .456$) were not significant, nor was the comparison between condition 1 and condition 2 ($p = .889$).

In summary, despite the slightly higher mean water-saving intention in condition 1 (*legacy motivation*) compared to the other conditions, the results provide no evidence for an effect of condition 1 on water-saving intention. Therefore, H1 is not supported.

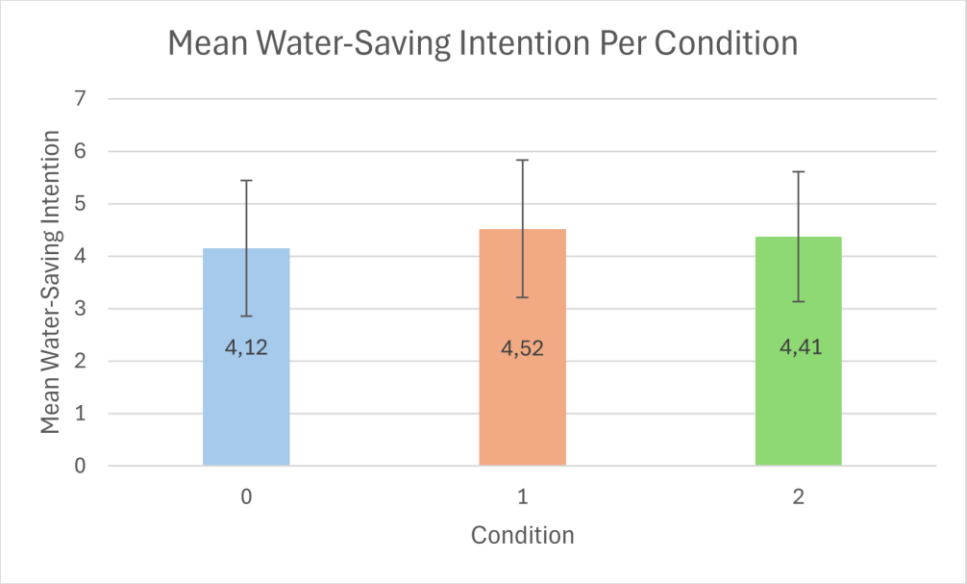

Figure 8 *Mean water-saving intention across conditions*

4.4 **Main Approach:** Mediation Effect

To examine the mediation effect hypothesised in H2, a non-parametric bootstrap mediation analysis was conducted in R with 5000 simulations. In the mediation model, experimental conditions 1 and 2 were included as independent variables, with psychological distance as mediator and water-saving intention as dependent variable. Parents' age and child's age were included as covariates. Condition 0 was used as the reference category. **Table 1** summarises the findings.

The results show that the direct effect of condition 1 (*legacy motivation*) on water-saving intention was not significant ($\beta = 0.15$, $SE = 0.19$, $p = .433$). The indirect effect ($\beta = 0.11$, $SE = 0.09$, $p = .251$) and total effect ($\beta = 0.26$, $SE = 0.21$, $p = .218$) of condition 1 on water-saving intention were also not significant. As for condition 2 (*living environment*), the direct effect was not significant ($\beta = -0.03$, $SE = 0.19$, $p = .863$). Furthermore, the indirect effect of condition 2 on water-saving intention ($\beta = 0.12$, $SE = 0.09$, $p = .190$) and total effect ($\beta = 0.09$, $SE = 0.21$, $p = .673$) were not significant either. Parents' age and child's age also had no significant effect.

However, what is highly significant in the mediation model is the effect of psychological distance on water-saving intention in both condition 1 ($\beta = 0.59$, $SE = 0.10$, $p < .001$) and condition 2 ($\beta = 0.60$, $SE = 0.10$, $p < .001$), relative to the reference category (condition 0). **Figure 9** shows the mediation diagram of condition 1, in which legacy motivation was manipulated.

Despite a significant effect of psychological distance on water-saving intention, the lack of significant indirect, direct and total mediation effects suggests that the experimental manipulation does not strongly influence water-saving intention through psychological distance. This could be due to limited differentiation in legacy motivation between the experimental conditions, as noted in the manipulation check (see section 4.2).

In summary, the results of the mediation analysis reject H2 as they indicate that condition 1, which specifically focused on legacy motivation, had no significant influence on water-saving intention through psychological distance.

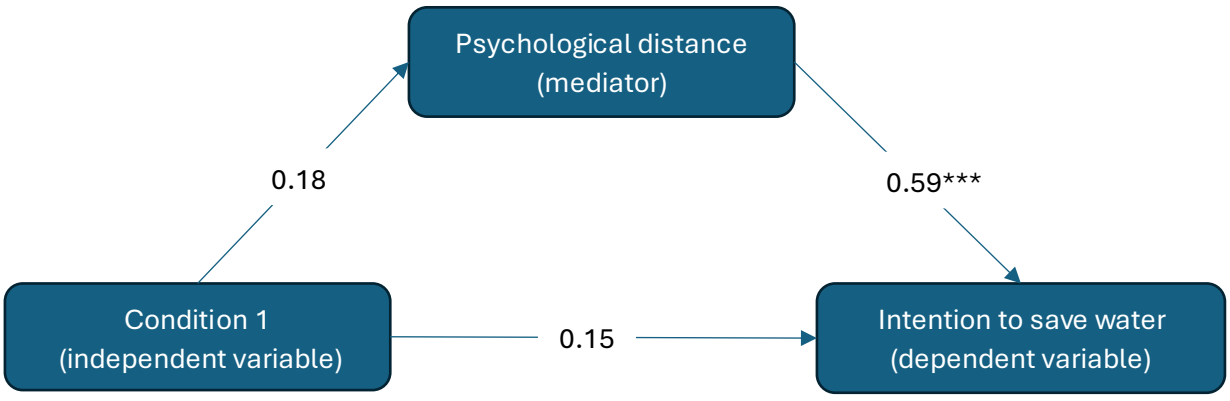

Figure 9 *Mediation diagram Condition 1 (legacy motivation)*

Table 1 *Mediation effect of the type of condition on water-saving intention (WS) via psychological distance (PD)*

	Effect of *condition* on *PD*	**Effect of *PD* on *WS***	**Total effect of *condition* on *WS***	**Direct effect of *condition* on *WS***	**Indirect effect of *condition* on *WS* (via *PD*)**
Condition 1	0.184 (0.150) CI [-0.112, 0.480]	0.588 (0.096)*** CI [0.398, 0.778]	0.257 (0.208) CI [-0.153, 0.668]	0.149 (0.190) CI [-0.225, 0.524]	0.108 (0.094) CI [-0.066, 0.311]
Condition 2	0.204 (0.151) CI [-0.093, 0.502]	0.597 (0.097)*** CI [0.406, 0.787]	0.089 (0.210) CI [-0.326, 0.503]	-0.033 (0.191) CI [-0.411, 0.345]	0.122 (0.093) CI [-0.058, 0.317]

Note. Reference category = condition 0; ***p < 0.001.

4.5 **Main Approach:** Moderation Effect

H3 was tested using a moderation analysis. The model included experimental conditions 1 and 2 as independent variables interacting with self-efficacy. Condition 0 was used as the reference category. The results are summarised in **Table 2** and **Figure 10**.

The results showed that the model in general was significant $F(7, 167) = 4.70$, $p < .001$, explaining 16.4% of the variance in water-saving intention ($R^2 = 0.16$). Interestingly, in this model, the main effect of condition 2 (*living environment*) was significant and negative ($\beta = -2.64$, $SE = 1.30$, $t(167) = -2.03$, $p = .044$). Furthermore, the interaction between condition 2 and self-efficacy was significant ($\beta = 0.60$, $SE = 0.26$, $t(167) = 2.26$, $p = .025$). This suggests that self-efficacy moderates the effect of condition 2 on water-saving intention. The interaction between condition 1 (*legacy motivation*) and self-efficacy was not significant ($\beta = 0.31$, $SE = 0.25$, $t(167) = 1.25$, $p = .214$). Parents' age and child's age were also not significant.

The results of the moderation analysis do not support H3. The model suggests that self-efficacy moderates the effect of experimental condition 2 but no significant moderation effect was found for condition 1. This may indicate that the manipulation in condition 1, which specifically focused on legacy motivation, was not strong enough to produce a moderation effect. However, there are other explanations possible (see section 5.3.1).

Table 2 *Moderation effect of self-efficacy on water-saving intention (**conditions** as Independent Variable)*

Predictor	Estimate	SE	t-value	p-value
Intercept	2.684	1.058	2.537	0.012*
Condition 1	-1.134	1.234	-0.919	0.360
Condition 2	-2.636	1.298	-2.030	0.044*
Self-Efficacy	0.159	0.194	0.818	0.415
Parents' age	0.018	0.016	1.148	0.253
Child's age	-0.012	0.024	-0.504	0.615
Condition 1 × Self-Efficacy	0.312	0.250	1.249	0.214
Condition 2 × Self-Efficacy	0.595	0.263	2.258	0.025*

Note. Reference category = condition 0; *p < 0.05.

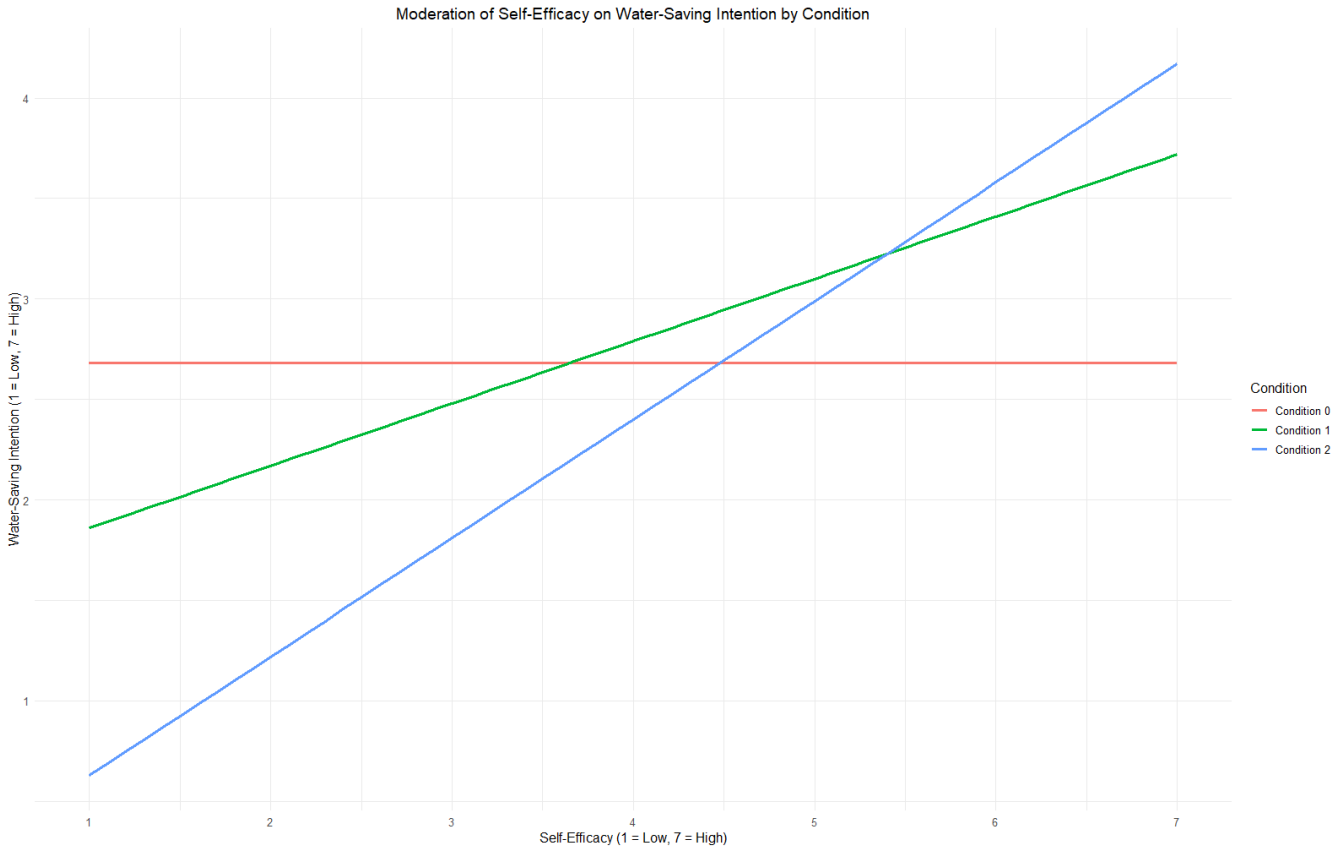

Figure 10 *Moderation effect of self-efficacy on water-saving intention per condition*
***Note.** Reference category = condition 0*

4.6 **Alternative Approach:** Direct Effect

To further test H1, it was decided to run a linear regression in which legacy motivation was used as independent variable, water-saving intention as dependent variable, and experimental conditions, parents' age, and child's age as control variables.

The overall model was significant: $F(5, 169) = 18.58$, $p < .001$, explaining 35.5% of the variance in water-saving intention ($R^2 = 0.35$). Furthermore, legacy motivation had a positive and highly significant effect on water-saving intention ($\beta = 0.61$, $SE = 0.07$, $t(169) = 9.22$, $p < .001$). Importantly, none of the control variables had a significant effect on water-saving intention.

In summary, the results of the linear regression model show that legacy motivation in itself is a significant positive predictor of water-saving intention. In other words, higher levels of legacy motivation among parents are associated with stronger intentions to save water, supporting H1. Pre-existing individual differences in legacy motivation among parents appear to be strongly related to water-saving intentions.

4.7 **Alternative Approach:** Mediation Effect

To further explore H2, a second mediation model was run with legacy motivation as independent variable, psychological distance as mediator and water-saving intention as dependent variable. The experimental conditions, parents' age and child's age were included as control variables. **Table 3** summarises the results of the mediation analysis.

The results of the second mediation model showed that the direct effect of legacy motivation on water-saving intention was significant ($\beta = 0.51$, $SE = 0.07$, $p < .001$), as was the indirect effect ($\beta = 0.09$, $SE = 0.04$, $p = .009$). The total effect was also highly significant ($\beta = 0.61$, $SE = 0.07$, $p < .001$). The proportionally mediated effect was 15.3%. Parents' age, child's age and the experimental conditions had no significant influence on these effects.

In summary, modelling legacy motivation as independent variable strongly supports H2. Legacy motivation significantly lowers parents' psychological distance, which in turn leads to stronger water-saving intentions. **Figure 11** shows the mediation diagram of this mechanism. This second mediation analysis highlights the significant relationship between legacy motivation, psychological distance and water-saving intention independent of the experimental conditions.

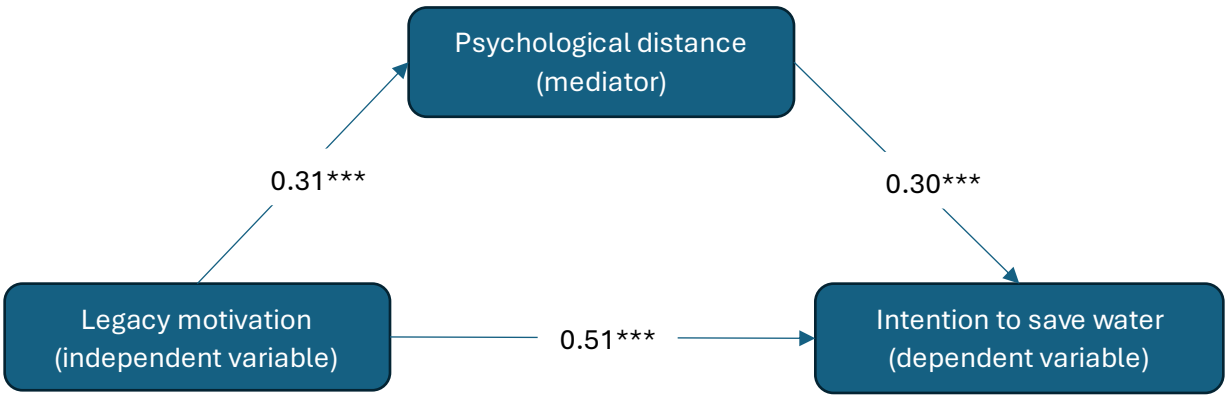

Figure 11 *Mediation diagram Legacy Motivation*

Table 3 *Mediation effect of legacy motivation (LM) on water-saving intention (WS) via psychological distance (PD)*

	Effect of *LM* on *PD*	**Effect of *PD* on *WS***	**Total effect of *LM* on *WS***	**Direct effect of *LM* on *WS***	**Indirect effect of *LM* on *WS* (via *PD*)**
Legacy motivation	0.307 (0.052)***	0.301 (0.094)***	0.606 (0.066)***	0.513 (0.070)***	0.092 (0.042)**
	CI [0.203, 0.410]	CI [0.116, 0.487]	CI [0.476, 0.735]	CI [0.375, 0.652]	CI [0.019, 0.182]

Note. Reference category = condition 0; **p < 0.01, ***p < 0.001.

4.8 **Alternative Approach:** Moderation Effect

The second moderation model included legacy motivation as independent variable and controlled for experimental conditions, parents' age and child's age. **Table 4** summarises the findings.

The results of this second model showed a significant interaction effect between legacy motivation and self-efficacy ($\beta = 0.18$, $SE = 0.07$, $t(167) = 2.55$, $p = .012$), suggesting that self-efficacy strengthens the positive relationship between legacy motivation and water-saving intention. The model in general was also significant $F(7, 167) = 16.88$, $p < .001$, explaining 41.4% of the variance in water-saving intention ($R^2 = 0.41$). None of the control variables had a significant effect.

In summary, self-efficacy appears to have an enhancing effect on the relationship between legacy motivation and water-saving intention, which supports H3.

Table 4 *Moderation effect of self-efficacy on water-saving intention (**legacy motivation** as independent variable)*

Predictor	**Estimate**	**SE**	**t-value**	**p-value**
Intercept	4.675	1.858	2.516	0.013*
Legacy Motivation	-0.326	0.351	-0.931	0.353
Self-Efficacy	-0.589	0.355	-1.659	0.099^{+}
Condition 1	0.090	0.190	0.475	0.636
Condition 2	-0.008	0.191	-0.041	0.967
Parents' age	-0.006	0.014	-0.461	0.646
Child's age	0.006	0.021	0.299	0.765
Legacy Motivation × Self-Efficacy	0.175	0.069	2.549	0.012*

Note. Reference category = condition 0; $^{+}$p < 0.1, *p < 0.05.

5 Conclusion & Discussion

5.1 Main Findings

The aim of this study was to examine how legacy motivation influences parents' intention to save water. In addition, this study investigated whether psychological distance towards drought acts as mediator and whether self-efficacy acts as a moderator. Specifically, this study focused on parents living in the Achterhoek with children aged between 0 and 18 years. It was expected that legacy motivation positively influences water-saving intention (H1), that psychological distance mediates this relationship (H2), and that self-efficacy moderates the effect of legacy motivation on water-saving intention (H3).

A survey experiment was conducted to test the three hypotheses. Thereby, the intention was to manipulate legacy motivation. However, the manipulation check showed no significant effects of the experimental manipulation on legacy motivation. The non-significant experimental manipulation affected the interpretation of the results, which indicated rejection of all three hypotheses. Therefore, it was decided to retest the hypotheses using an alternative approach, treating the experimental data as survey data. While no causal conclusions can be drawn using this approach, its findings support all three hypotheses and indicate that further research on the role of legacy motivation in pro-environmental intentions remains valuable. With these insights, this study provides a theoretical foundation for future research but there is much room for further development and refinement of interventions that respond to legacy motivation.

5.2 Theoretical Implications

The alternative approach showed that legacy motivation appears to be a positive and significant predictor of water-saving intention. This suggests that parents with a higher motivation to leave a positive legacy have a stronger intention to save water. This finding aligns with previous studies highlighting legacy motivation as a driver of pro-environmental behaviour (Bang et al., 2017; Shrum, 2021; Syropoulos & Markowitz, 2024; Zaval et al., 2015). One possible explanation is that parents feel responsible for their children's future, which makes them more inclined to make environmentally conscious choices. This touches directly on the concept of environmental identity formation: parents pass on environmental awareness to their children, helping to shape their environmental identity (Lawson et al., 2019; Nche et al., 2019). In turn, children who grow up with an environmentally conscious mindset are more likely to make sustainable choices themselves in the future. This underscores the crucial role of parents in the transition towards a climate resilient society (Nche et al., 2019; Shrum et al., 2023).

In addition, the results of the alternative approach indicated that psychological distance seems to be an important mediator: parents with higher legacy motivation perceive drought as a more tangible problem, making them more inclined to save water. This is consistent with Construal Level Theory (CLT), which states that reducing psychological distance makes environmental issues feel more concrete and personally relevant (Liberman & Trope, 2008; Trope & Liberman, 2010). In turn, a reduced psychological distance is linked to increased water-saving intentions (Sanchez et al., 2023; Seyranian et al., 2015). The finding is also in line

with previous studies suggesting that legacy motivation helps to reduce the psychological distance towards climate impacts (De Paula Sieverding et al., 2024; Zaval et al., 2015). Therefore, the findings of this study add to the potential of legacy motivation to reduce psychological distance, making parents perceive the drought issue in the Achterhoek as personally relevant.

Lastly, using the alternative approach, self-efficacy appears to strengthen the relationship between legacy motivation and water-saving intention. This finding highlights the importance of not only motivation when it comes to saving water but also reinforcing individuals' sense of control as other studies have already found (Addo et al., 2019; Coetzer-Liversage et al., 2024; Meijers et al., 2018). This implies that in addition to addressing legacy motivation, it is useful to invest in increasing parents' self-efficacy with regards to saving water. Concrete ways to address self-efficacy are, for example, communicating specific water-saving strategies and providing feedback on the impact of water-saving measures. Both ways can encourage households to implement water-saving behaviour (Addo et al., 2019; Sanchez et al., 2023). Good to mention here is that this study deliberately chose not to include specific water-saving strategies in the experimental manipulation as this would directly influence self-efficacy, whereas it was necessary to specifically isolate the role of legacy motivation.

Importantly, with the alternative approach, this study did not test explicit cause-effect relationships but only conceptual relationships. Therefore, caution is needed when drawing conclusions. Nevertheless, the alternative approach highlights the relevance of legacy motivation when it comes to water-saving intentions. In doing so, it positively contributes to existing literature on legacy motivation in relation to pro-environmental intentions. The non-significant experimental manipulation raises the question about how legacy motivation can be effectively stimulated or enhanced, in both experimental settings and the real world. This offers opportunities for future research, which are discussed below.

5.3 Limitations and Recommendations

5.3.1 Experimental Manipulation

The main limitation of this study is that the experimental manipulation did not generate significant effects. One early indication that the manipulation did not succeed was that a relatively low percentage of the participants in condition 1 (66.7%, *legacy motivation*) correctly reported that they had seen a poster with a focus on future generations. The higher mean score on legacy motivation in condition 1 and 2 in which a poster was shown, compared to the control condition (*no poster*), suggests that exposure to a poster had some influence on parents' legacy motivation. However, the question remains whether the experimental manipulation was framed ineffectively, or too subtle to have a significant effect.

Tijs et al. (2017) highlight that intrinsically motivated messages, such as 'save water for a sustainable future', seem promising in increasing water-saving behaviour. This study incorporated this insight on the poster in experimental condition 1 (*legacy motivation*): "Join in saving water at home and protect the future of our children". In retrospect, it may be that the sentence on the poster in experimental condition 2 (*living environment*) "Join in saving water at home and protect our living environment" was too similar to the sentence on the poster

condition 1. Although there was no explicit reference to future generations on the poster in condition 2, the phrase "our living environment" may still have evoked a sense of responsibility and intrinsic motivation. This unintended similarity may have influenced responses, making it more difficult to distinguish the effects of each experimental condition. A concrete example of an unexpected finding is the significant interaction between condition 2 and self-efficacy, suggesting that self-efficacy moderates the effect of condition 2 on water-saving intention. There is a possibility that condition 2 triggered a certain unknown dynamic that is enhanced by higher levels of self-efficacy. It could be that the phrase "our living environment" functioned as a more direct call to action than "the future of our children", which refers to a more distant and abstract timespan. Future research could make the experimental manipulations more distinct. For example, by adding extrinsically motivated messages such as 'save water to reduce costs' (Tijs et al., 2017).

The absence of significant manipulation effects can also be explained by the fact that the effectiveness of framing depends heavily on how it is implemented in studies, for example, through text, video, or audio (see, for example, Ahn et al., 2015; Essl et al., 2024; Grazzini et al., 2018; Hurlstone et al., 2020; Spence & Pidgeon, 2010; White et al., 2011). This study applied framing via a static poster, which may have been less impactful than more dynamic or interactive forms of communication such as videos. Furthermore, parents who are already strongly environmentally aware may be less susceptible to framing effects as they have likely already adjusted their behaviour. The non-significant findings in this study raise the question of whether other communication strategies, such as storytelling or social norm messages, would be more successful in activating legacy motivation. Future research could test whether messages including personal stories or social comparison, e.g. 80% of parents in your neighbourhood save water for their children's future, are better at stimulating water-saving intentions than the poster messages used in this study.

Another possible explanation for the lack of significant effects is the sample size of this study. Although the final sample was appropriate given the specific target group, geographical area, and time constraints, it was relatively small compared to other survey experiments. A larger sample would potentially increase statistical power and make small effects more detectable. This is particularly relevant when studying subtle differences between experimental conditions. Future research could take this into account.

Besides the way framing was used in this study and the relatively small sample size, an important reason for the weak manipulation may be that participants were only exposed to the stimulus once. A one-time exposure may not be enough to create a measurable effect, while repeated or long-term exposure may produce stronger results. Future research could explore whether repeated exposure to legacy-related messages strengthens legacy motivation over time. This is particularly relevant for designing campaigns targeting legacy motivation as it would provide insight into whether a one-time message is sufficient or whether a structured, repeated approach is more effective in activating legacy motivation.

Finally, an interesting point of discussion is whether explicit awareness of the poster's message is needed to influence participants' legacy motivation, or whether unconscious processing already sufficiently influences their legacy motivation. The fact that some respondents chose the 'other' option when asked about the poster's message but still gave a relevant interpretation, suggests that they may have understood the message but labelled it

differently than expected. Although this study did not succeed in purposefully activating parents' legacy motivation, future research could explore differences between conscious and unconscious exposure to legacy-related messages and their potential effects on legacy motivation.

5.3.2 Generalisability

A second limitation of this study is the limited generalisability of the findings to a broader population. This study focused specifically on legacy motivation among parents in the Achterhoek region with children aged 0 to 18. Besides this specific target group, the sample of this study mainly consisted of highly educated women. This should be taken into account when considering the generalisability of the findings to a broader population of parents. Furthermore, this study did not examine the influence of socio-economic factors, such as education level or gender, on legacy motivation, which future research could explore in a more diverse sample. Another recommendation for future research is to expand the target group. For instance, by including parents with children older than 18 years, or by sampling based on whether children still live at home with their parents rather than age. In addition, it could be valuable to investigate differences in legacy motivation between parents and non-parents. However, given the sensitivities surrounding parenthood and family planning, such research should be carefully designed. Future research could also focus on a broader geographical sample in drought-affected areas other than the Achterhoek region.

A methodological limitation of this study regarding its sample is that there may be participants in the dataset with children older than 18 years, despite this study's inclusion criteria. Some participants may have misinterpreted the child's age criterium as the maximum age of participants was 72 years. This illustrates a disadvantage of survey experiments: the researcher has to rely on participants filling in their data correctly and is limited in verifying whether any outliers in the data are correct, as the data are anonymous. Nevertheless, the mean age distribution of this study's sample does not indicate any major discrepancies, suggesting that most participants met the inclusion criteria.

5.3.3 Measurement Reliability

A third limitation of this study concerns the measurement reliability of the survey item scales. Overall, the survey item scales used in this study were reliable. A Cronbach's alpha of 0.60 or higher was considered acceptable. However, the self-efficacy item scale scored lower in terms of reliability compared to the other item scales. For future research, it is recommended to refine the self-efficacy item scale, potentially by revising the item wording or adding more items to improve internal consistency.

Furthermore, this study measured psychological distance using one statement per dimension. Future research could expand the item scale for psychological distance to further differentiate between the four dimensions of psychological distance, as defined by Construal Level Theory (CLT, Trope & Liberman, 2010). Future research could also investigate how different dimensions of psychological distance (i.e. temporal, spatial, social and hypothetical)

interact with legacy motivation. This allows for deeper insights into possible distinct effects of each dimension.

Lastly, in this study, some respondents indicated that they were unsure how to interpret the statements on water-saving intention because they had already taken several measures to save water. Therefore, they filled in neutral answers, which may have led to less variation within the dataset. Respondents who already exhibit maximum water-saving behaviour have little room for further improvement in their intentions, even when exposed to the experimental conditions. The neutral answers of respondents who were already consciously using water may partly explain the lack of significant differences in water-saving intention between the experimental conditions. To address this limitation, future research could use existing or develop new measurement tools that remain relevant for participants who are already conscious of their water use. Additionally, segmenting respondents based on their current water-saving behaviour could allow for a more targeted analysis of intervention effectiveness across different groups. Another approach could be to include covariates, such as a measure of current water use, in the analysis to account for differences in pre-existing habits.

5.4 Practical Implications

Limitations notwithstanding, this study provides valuable insights for policymakers, such as the Rijn and IJssel water board and municipalities in the Achterhoek, and organisations committed to water conservation.

Legacy motivation seems to be particularly effective when parents believe that they themselves are able to save water. This means that interventions should not only address the importance of water conservation for future generations but also provide parents with practical tools and action perspectives. These could, for example, include water-saving tips tailored to household needs, feedback on the impact of water-saving measures and recognisable success stories from other households.

Furthermore, the findings of this study suggest that legacy motivation helps to perceive drought as a concrete and relevant problem, which in turn increases parents' water-saving intentions. Communication strategies can respond to this by linking the consequences of drought to the immediate living environment of parents and their children, while prompting parents to think about their legacy. This can be supported by, for example, visuals such as infographics about water shortages in the Achterhoek or personal stories of families affected by drought problems. It could also be valuable to show a contrast, such as what the future will look like if households start saving (more) water compared to when they do not.

In addition to these factors, collective values play an important role in the Achterhoek. Caring for future generations, a key aspect of legacy motivation, can be seen as such a collective value. Other values, although not specifically examined in this study, relate to the regional identity and strong sense of community ("'t Noaberschap") within the Achterhoek. It is recommended to take these into account when designing interventions targeted at the region.

In summary, this study highlights the potential of legacy motivation in increasing water-saving intentions but also showed that legacy motivation may not be easily activated through a one-time intervention. Furthermore, while parents may feel responsible to safeguard their children's future, this study's findings suggest that legacy-based messaging should not be used

in isolation. Instead, policymakers and organisations committed to water conservation are encouraged to combine legacy motivation with tangible action perspectives, which reduce psychological distance towards drought and enhance self-efficacy to save water.

Some key questions that still remain are: How to activate legacy motivation in real-world interventions? What forms of communication (e.g. framing, storytelling, social norms, etc.) are most effective in doing so? Are there additional factors that limit or enhance legacy motivation? The insights from this study provide a step towards understanding legacy motivation within a specific target group and context. Further research is needed to exploit the potential of legacy motivation as a driver of water-saving behaviour and test its application within broader populations and settings. By strategically integrating legacy motivation into behavioural interventions and supporting it with other psychological insights, there is great potential that we can move towards a sustainable water future.

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Appendices

Appendix A Survey

Beste deelnemer,

U bent uitgenodigd om deel te nemen aan een onderzoek uitgevoerd door Emma te Pas, een student aan Wageningen University & Research.
Voordat u besluit deel te nemen, is het belangrijk dat u begrijpt wat het doel van het onderzoek is, welke procedures worden gevolgd, en wat de mogelijke risico's en voordelen zijn. Neem alstublieft de tijd om de volgende informatie zorgvuldig door te lezen.

Doel van het onderzoek en gang van zaken
Voor mijn masterscriptie wil ik graag meer te weten komen over hoe ouders in de Achterhoek aankijken tegen droogte en waterbesparing.
Bent u ouder van een kind of kinderen van 18 jaar of jonger? En woont u in de Achterhoek? Dan zou ik het zeer op prijs stellen als u de tijd neemt om mijn vragenlijst in te vullen.

Als u akkoord gaat met de deelname aan dit onderzoek, wordt uw mening gevraagd over droogte en watergebruik in de Achterhoek. Het onderzoek duurt ongeveer 5-10 minuten. Er worden geen verwachte risico's geassocieerd met deelname aan dit onderzoek. Onder de deelnemers wordt een VVV-cadeaubon ter waarde van €10 verloot. Aan het eind van de vragenlijst kunt u aangeven of u aan deze loting wilt meedoen.

Vertrouwelijkheid van gegevens
Privacy en vertrouwelijkheid zullen strikt worden gehandhaafd. Uw antwoorden zullen geanonimiseerd worden en er zal geen persoonlijk identificeerbare informatie worden vrijgegeven. Alle tijdens dit onderzoek verzamelde informatie wordt vertrouwelijk bewaard en zal alleen voor onderzoeksdoeleinden worden gebruikt. De onderzoeksresultaten worden gebruikt in een thesis voor de Master Communicatie en Innovatie aan Wageningen University & Research en mogelijk voor verdere wetenschappelijke publicatie.

Vrijwilligheid
Uw deelname aan dit onderzoek is vrijwillig. U heeft het recht om op elk moment en om welke reden dan ook uit het onderzoek te stappen, zonder enige gevolgen. Als u tijdens het onderzoek zelf besluit uw medewerking te staken, zal dat eveneens op geen enkele wijze gevolgen hebben. Tevens kunt u na dit onderzoek alsnog uw medewerking intrekken, zonder opgave van redenen. Mocht u uw medewerking staken, of achteraf uw toestemming intrekken, dan zullen uw gegevens worden verwijderd uit de bestanden.

Nadere inlichtingen
Mocht u vragen, klachten of opmerkingen hebben dan kunt u terecht bij de verantwoordelijke onderzoeker, Emma te Pas (*emma.tepas@wur.nl*).

Ik hoop u hiermee voldoende te hebben geïnformeerd en wil u bij voorbaat **zeer hartelijk bedanken voor uw deelname aan dit onderzoek**.

Met vriendelijke groet,

Emma te Pas

Als u wilt deelnemen aan dit onderzoek, klik dan hieronder op "Ja, ik wil deelnemen". Hiermee verklaart u:

- Ik ben 16 jaar of ouder.
- Ik heb de informatie gelezen en begrepen.
- Ik stem in met deelname aan het onderzoek en gebruik van de verkregen gegevens.
- Ik behoud het recht om deze toestemming op elk moment zonder opgave van reden in te trekken.
- Ik behoud het recht om tijdens het invullen van de vragenlijst op elk gewenst moment te stoppen.

○ Ja, ik wil deelnemen

○ Nee, ik wil niet deelnemen

age_p **Wat is uw leeftijd?**

▼ Jonger dan 18 ... 99

gen **Wat is uw gender?**

○ Man

○ Vrouw

○ Non-binair / Anders

○ Zeg ik liever niet

edu **Wat is uw opleidingsniveau?**

- ○ Geen diploma
- ○ Basisonderwijs
- ○ VMBO, HAVO/VWO onderbouw, MBO1
- ○ HAVO/VWO bovenbouw, MBO2-4
- ○ Bachelor (HBO / WO)
- ○ Master (HBO / WO)
- ○ Doctoraat, PhD

reg **Woont u in de Achterhoek?** *De Achterhoek omvat de gemeenten Aalten, Berkelland, Bronckhorst, Doetinchem, Montferland, Oost Gelre, Oude IJsselstreek en Winterswijk. Woont u in een omliggende gemeente zoals Zutphen of Lochem, en voelt u zich verbonden met de Achterhoek? Kies dan ook "Ja".*

- ○ Ja
- ○ Nee

env **Hoe zou u uw huidige woonomgeving omschrijven?**

- ○ Stedelijk gebied
- ○ Dorpsgebied (woongebied met directe toegang tot basisvoorzieningen)
- ○ Plattelandsgebied (afgelegen of landelijk gebied)

cli **Geef alstublieft aan op een schaal van 1 (ik leef niet milieubewust) tot 7 (ik leef volledig milieubewust) in hoeverre u vindt dat u milieubewust leeft.** *Onder milieubewust wordt verstaan dat u actief rekening houdt met uw invloed op het milieu*.

	1- Ik leef niet milieubewust	2	3	4- Neutraal	5	6	7- Ik leef volledig milieubewust
In hoeverre leeft u milieubewust? (cli)	○	○	○	○	○	○	○

se **Onderstaande stellingen gaan over uw watergebruik. Geef alstublieft per stelling aan in hoeverre u het ermee eens of oneens bent op een schaal van 1 (helemaal oneens) tot 7 (helemaal eens).**

	1- Helemaal oneens	2	3	4- Neutraal	5	6	7- Helemaal eens
Ik ben ervan overtuigd dat ik mijn watergebruik kan verminderen. (se_1)	○	○	○	○	○	○	○
Ik weet wat ik kan doen om water te besparen in mijn huishouden. (se_2)	○	○	○	○	○	○	○
Het is gemakkelijk voor mij om water te besparen. (se_3)	○	○	○	○	○	○	○
Als ik wil, kan ik actie ondernemen om mijn watergebruik te verminderen. (se_4)	○	○	○	○	○	○	○

kid **Hoeveel kinderen heeft u?**

- ○ Ik heb geen kinderen
- ○ 1
- ○ 2
- ○ 3
- ○ 4
- ○ 5 of meer

age_k **Wat is de leeftijd van uw (oudste) kind?**

▼ 0 ... 18

aandacht_succeed **Om er zeker van te zijn dat u deze vragenlijst zorgvuldig leest, vraag ik u om de optie "helemaal oneens" aan te klikken.**

- ○ Helemaal oneens
- ○ Oneens
- ○ Neutraal
- ○ Eens
- ○ Helemaal eens

aandacht_fail_text **Let op:** de vorige vraag werd gesteld om na te gaan of u de vragenlijst zorgvuldig leest en invult. Beantwoord de vraag hieronder alstublieft nog eens.

aandacht_failed **Om er zeker van te zijn dat u deze vragenlijst zorgvuldig leest, vraag ik u om de optie "helemaal oneens" aan te klikken.**

- ○ Helemaal oneens
- ○ Oneens
- ○ Neutraal
- ○ Eens
- ○ Helemaal eens

txt_controle **U krijgt nu enkele vragen te zien, waarbij u kunt aangeven in hoeverre u het eens of oneens bent met verschillende stellingen. Als u klaar bent om te starten met deze vragen, kunt u verdergaan.**

txt_poster1 **U krijgt zo een poster te zien. Bekijk deze alstublieft aandachtig. Na het bekijken van de poster worden er een aantal vragen gesteld. U kunt dan niet meer terugbladeren naar de poster. Als u klaar bent om te starten, kunt u verdergaan.**

Postercheck 1 **Kon u de poster goed zien?**

- ○ Ja
- ○ Nee

txt_poster2 **U krijgt zo een poster te zien. Bekijk deze alstublieft aandachtig. Na het bekijken van de poster worden er een aantal vragen gesteld. U kunt dan niet meer terugbladeren naar de poster. Als u klaar bent om te starten, kunt u verdergaan.**

Postercheck 2 **Kon u de poster goed zien?**

- ○ Ja
- ○ Nee

pd **Onderstaande stellingen gaan over uw kijk op droogte. Geef alstublieft per stelling aan in hoeverre u het ermee eens of oneens bent op een schaal van 1 (helemaal oneens) tot 7 (helemaal eens).**

	1- Helemaal oneens	2	3	4- Neutraal	5	6	7- Helemaal eens
De gevolgen van droogte in de Achterhoek voelen voor mij als iets wat zich afspeelt in de verre toekomst. (pd_1)	○	○	○	○	○	○	○
De gevolgen van droogte in de Achterhoek hebben een negatief effect op mensen zoals ik. (pd_2)	○	○	○	○	○	○	○
Ik merk de gevolgen van droogte in de Achterhoek direct in mijn omgeving. (pd_3)	○	○	○	○	○	○	○
Ik verwacht dat toekomstige droogte in de Achterhoek een negatief effect zal hebben op mijn dagelijks leven. (pd_4)	○	○	○	○	○	○	○

ws **Onderstaande stellingen gaan over uw intentie tot waterbesparing. Geef alstublieft per stelling aan in hoeverre u het ermee eens of oneens bent op een schaal van 1 (helemaal oneens) tot 7 (helemaal eens).**

	1- Helemaal oneens	2	3	4- Neutraal	5	6	7- Helemaal eens
Ik ben van plan om van nu af aan mijn watergebruik te verminderen. (ws_1)	○	○	○	○	○	○	○
Ik wil proberen om bewuster met water om te gaan, bijvoorbeeld door korter te douchen of de kraan dicht te draaien tijdens het tandenpoetsen. (ws_2)	○	○	○	○	○	○	○
Ik ben van plan om waterbesparende apparaten of programma's te gebruiken, zoals het eco-programma op de vaatwasser of wasmachine. (ws_3)	○	○	○	○	○	○	○
Ik wil water gaan opvangen en hergebruiken, bijvoorbeeld voor de tuin of het schoonmaken. (ws_4)	○	○	○	○	○	○	○

lm **Geef alstublieft per stelling aan in hoeverre u het ermee eens of oneens bent op een schaal van 1 (helemaal oneens) tot 7 (helemaal eens).**

	1- Helemaal oneens	2	3	4- Neutraal	5	6	7- Helemaal eens
Ik wil dat mijn keuzes nu bijdragen aan een betere toekomst voor de generaties die na mij komen. (lm_1)	○	○	○	○	○	○	○
Ik vind het belangrijk om iets positiefs na te laten voor de generaties die na mij komen. (lm_2)	○	○	○	○	○	○	○
Ik hecht waarde aan wat de generaties die na mij komen, zullen denken over mij als persoon. (lm_3)	○	○	○	○	○	○	○
Ik wil voorkomen dat mijn keuzes negatieve gevolgen hebben voor de generaties die na mij komen. (lm_4)	○	○	○	○	○	○	○

seen_poster **Heeft u in deze vragenlijst een poster gezien?**

- ○ Ja
- ○ Nee

message_poster **Wat was volgens u de belangrijkste boodschap van de poster?**

- ○ Thuis water besparen helpt om de toekomst van onze kinderen te beschermen
- ○ Thuis water besparen helpt om onze leefomgeving te beschermen
- ○ Anders, namelijk: _____

dankwoord U bent aan het einde van de vragenlijst beland. Sla uw antwoorden op door op **de knop <u>rechtsonder</u> te drukken.**
Hartelijk dank voor uw deelname aan dit onderzoek!

Over dit onderzoek
Dit onderzoek ging over waterbesparing in de Achterhoek. Alle deelnemers aan dit onderzoek beantwoordden dezelfde vragen. Sommige deelnemers kregen enkel die vragen te zien, anderen zagen ook een poster. Deze posters werden ontworpen voor dit onderzoek en verwijzen naar een fictieve organisatie genaamd “Spaar Je Water”. De posters en de organisatie bestaan dus niet echt.
Er waren twee soorten posters die u te zien kon krijgen: een poster met met de boodschap om thuis water te besparen voor de toekomst van onze kinderen, en een met de boodschap thuis water te besparen voor onze leefomgeving. Door verschillende posters te tonen en vervolgens vragen te stellen over watergebruik en droogte, hoop ik meer te weten te komen over wat mensen motiveert tot waterbesparend gedrag.

Over uw gegevens
Alle gegevens die tijdens dit onderzoek zijn verzameld, worden anoniem verwerkt en uitsluitend gebruikt voor onderzoeksdoeleinden.

Uw bijdrage aan dit onderzoek is van grote waarde en wordt zeer gewaardeerd. Nogmaals hartelijk dank!

Indien gewenst kunt u bij onderstaande vragen uw e-mailadres achterlaten om kans te maken op een VVV-bon en/of eventuele opmerkingen over het onderzoek noteren.

VVV-cadeaubon **Indien gewenst kunt u hieronder uw e-mailadres invullen om kans te maken op een VVV-cadeaubon ter waarde van €10. De winnaar krijgt uiterlijk eind januari bericht.** *Het invullen van uw e-mailadres heeft geen invloed op de anonimiteit van uw antwoorden; deze blijven volledig anoniem. Uw e-mailadres wordt uitsluitend gebruikt om contact met u op te nemen als u de gelukkige winnaar bent.*

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vragen **Indien u vragen of opmerkingen heeft met betrekking tot dit onderzoek, dan kunt u deze hier noteren** (*optioneel*).

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Appendix B Recruitment Text and Poster

Voor mijn masterscriptie ben ik op zoek naar ouders in de Achterhoek die willen deelnemen aan een korte vragenlijst over droogte en waterbesparing 🚰☀️

Het invullen van de vragenlijst duurt slechts 5-10 minuten, en deelnemers maken kans op een VVV-cadeaubon t.w.v. €10!

Voldoe jij aan de criteria op de poster hieronder? Scan dan de QR-code of klik op de volgende link om mee te doen: https://lnkd.in/eDP9WhfR

Delen wordt enorm gewaardeerd! Alvast hartelijk dank voor je hulp! 😊

Figure B1 *Recruitment text*

Figure B2 *Recruitment poster*

Appendix C Results Tables

Table C1 *Reliability analysis item scales*

Measures	M (SD)	Min	Max	Cronbach's α
Self-efficacy	4.9 (0.9)	1	7	0.63
Water-saving intention	4.1 (1.3)	1	7	0.80
Psychological distance	4.3 (1.3)	1	7	0.79
Legacy motivation	5.0 (1.2)	1	7	0.85

Table C2 *Sample demographics (N = 175)*

Variables	Sample *M* (*SD*), Min, Max or Percentage		Test for Differences by Condition, F/p or χ2/p
Age of Parents	44.97 (8.24), Min = 26, Max = 72		F (2, 172) = 3.81, p = 0.024*
Gender of Parents	Male	26.29%	$\chi^2_{(4)}$ = 3.11, p = 0.540
	Female	73.14%	
	Non-binary / Other	0.00%	
	Prefer not to say	0.57%	
Level of Education	No diploma	0.57%	$\chi^2_{(10)}$ = 13.88, p = 0.178
	Primary education	0.00%	
	Lower secondary education/ Secondary vocational education (Level 1)	12.00%	
	Upper secondary education/ Secondary vocational education (Levels 2-4)	25.71%	
	Bachelor's degree (Applied Sciences / University)	40.00%	
	Master's degree (Applied Sciences / University)	20.57%	
	Doctorate / PhD	1.14%	
Living Environment	Urban	21.14%	$\chi^2_{(4)}$ = 8.64, p = 0.071
	Village	54.29%	
	Rural	24.57%	
Environmental Awareness	4.75 (1.05), Min = 1, Max = 7		F (2, 172) = 1.23, p = 0.294
Number of Children	1	17.14%	$\chi^2_{(8)}$ = 7.74, p = 0.460
	2	52.57%	
	3	25.14%	
	4	4.57%	
	5 or more	0.57%	
Age of (oldest) Child	12.42 (5.39), Min = 0, Max = 18		F (2, 172) = 3.75, p = 0.025*

* = significant at $p < 0.05$.

Table C3 *Demographics post-hoc tests*

Variable	Condition	Difference	95% CI (lwr, upr)	p-value
Age of parents	1 vs 0	-2.587	(-6.120, 0.945)	0.196
	2 vs 0	-4.061	(-7.593, -0.529)	0.020*
	2 vs 1	-1.474	(-5.066, 2.118)	0.597
Age of (oldest) child	1 vs 0	-2.322	(-4.631, -0.012)	0.049*
	2 vs 0	-2.286	(-4.596, 0.023)	0.053
	2 vs 1	0.035	(-2.314, 2.384)	0.999

* = significant at $p < 0.05$.

Table C4 *Means and SEs, controlled for parents' age a*nd child's age

Variable	Condition 0 *M (SE)*	Condition 1 *M (SE)*	Condition 2 *M (SE)*
Self-efficacy (*se_mean*)	4.83 (0.12)	4.87 (0.12)	4.90 (0.12)
Water-saving intention (*ws_mean*)	4.12 (0.17)	4.52 (0.17)	4.41 (0.17)
Psychological distance (*pd_mean*)	3.55 (0.12)	3.93 (0.12)	3.94 (0.12)
Legacy motivation (*lm_mean)*	4.72 (0.16)	5.24 (0.16)	5.19 (0.16)

Table C5 *Post-hoc tests p-values, controlled for parents' age a*nd child's age

Variable	Condition 0 vs 1	Condition 0 vs 2	Condition 1 vs 2
Self-efficacy (*se_mean*)	0.964	0.892	0.978
Water-saving intention (*ws_mean*)	0.219	0.456	0.889
Psychological distance (*pd_mean*)	0.071^{+}	0.060^{+}	0.996
Legacy motivation (*lm_mean)*	0.061^{+}	0.104	0.974

$^{+}$ = significant at $p < 0.1$.