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The Role of Climate Change Concerns and  
Perceptions of the Future in Reproductive  
Decision-Making in a Pronatalist Context

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Doctoral Dissertation

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# 1. Introduction

Climate change is no longer a distant threat: it is unfolding in real time, shaping the world we live in, yet what this term means to individuals and the ways it is understood and internalised varies widely. In principle, many acknowledge it as a pressing global issue, an existential challenge with already perceivable effects. Most people are familiar with the concept and recognise it as a macro-level threat that calls for concern (European Commission, 2023), however, depth of understanding is not uniform. For some, it is an abstract issue, present in news cycles and political debates but distant from their everyday lives. For others, it is an everyday conversation topic, or even a tangible reality, marked by extreme weather events, environmental degradation, or personal experiences of loss. Those who perceive it as an urgent crisis might translate their concerns into concrete behavioural changes (Broomell et al., 2015; Zaremba et al., 2022). Dobson (2007) explores the idea of the ‘environmental citizenship’, in which an “environmental citizen’s behaviour will be influenced by an attitude that is—in part, at least—informed by the knowledge that what is good for me as an individual is not necessarily good for me as a member of a social collective” (p. 280), and environmental citizenship extends beyond public engagement to include responsibility for private choices such as heating and cooling our homes and food consumption as well (Dobson, 2007). Climate change concerns influence not only actions of individuals (such as reducing consumption or engaging in activism) but also psychological well-being (Clayton, 2020; Zaremba et al., 2022). A growing body of research documents the rise of climate anxiety, a form of distress linked to the anticipation of climate-related disasters, which can, in turn, shape broader life choices and outlooks (Daeninck et al., 2023; Hickman et al., 2021).

The starting point of my dissertation is the premise that macro-level concerns (with my focus on those related to climate change) affect how individuals think about long-term life decisions, including childbearing. In my dissertation, I examine the issue of childbearing and related attitudes from multiple perspectives. Reproductive attitudes as a broad concept refer to people’s positive and negative evaluations of having and raising children (Davis et al., 2019). According to the Miller-Pasta theory (as discussed in Philipov & Bernardi, 2011), motivations, attitudes, and beliefs linked to childbearing form the most general and distant level from the actual decision to have a child. These build desires, which influence the construction of fertility intentions (Philipov & Bernardi, 2011). Fertility intention, such as ideal family size, is often seen as key predictor

of reproductive behaviour and considered reliable proxy for observed fertility (Morgan & Rackin, 2010; Malicka et al., 2021). In addition to addressing different stages of the sequence of reproductive decision-making, my thesis also examines individuals' attitudes towards fertility-related decisions such as voluntary childlessness.

I argue that climate change introduces a layer of uncertainty comparable to economic and health crises or geopolitical instability, all of which have been extensively studied in relation to their impact on fertility intentions and family formation. While there is considerable research on how economic insecurity (Billari et al., 2006; Goldstein et al., 2013; Sobotka et al., 2011), pandemics such as the COVID-19 (Guetto et al., 2022), armed conflicts (Golovina et al., 2025; Perelli-Harris & Hilevych, 2023) and other macro-level processes influence reproductive behaviours (Comolli, 2023; Comolli & Vignoli, 2021), the potential link between climate change and reproductive decision-making has received far less scholarly attention. Five years ago, Schneider-Mayerson and Leong (2020) highlighted the relative scarcity of research linking climate change and reproductive choices. Since then, a comprehensive paper addressing environmental childlessness (Krähenbühl, 2022) and a recent systematic review (Dillarstone et al., 2023) confirmed that this is still a largely underexplored area. However, over the past few years, academic interest on this very topical issue has grown, and my own research contributes to this expanding field, addressing gaps in our understanding. Even among the studies that do examine the climate–fertility link, few adopt a multidimensional perspective that investigates the exact ways and mechanisms how climate concerns can shape reproductive decision-making (Zimmermann et al., 2024, exemplifies such an approach).

At one extreme of the spectrum linking environmental concerns and reproductive attitudes are the few individuals who forego childbearing or have fewer children than planned for ecological reasons, viewing this as a form of action to mitigate climate change (Helm et al., 2021; Krähenbühl, 2022; Schneider-Mayerson, 2021). A more common perspective, however, is that climate change is perceived as a threat to the future of one's potential child (Helm et al., 2021; Ivanova & Balbo, 2024; Krähenbühl, 2022; Nakkerud, 2024). Both of these perspectives have gained increasing visibility in public discourse recently. Media reports frequently highlight how climate-related anxieties influence

fertility intentions<sup>1</sup>, not only in European contexts but also in Hungary<sup>2</sup>. Public narratives echo academic findings, suggesting that climate change is becoming a critical factor in reproductive decision-making, though often in ways that are mediated by broader socio-political and economic contexts.

This thesis focuses on the perspectives of individuals and presents three empirical studies exploring the role of climate change and related uncertainties in shaping reproductive attitudes, intentions and attitudes towards voluntary childlessness in the Central and Eastern European (CEE) context, where, with a few exceptions (e.g. Bastianelli, 2025, analysing Estonia), sociological research has not yet examined this relationship. Each study in this dissertation approaches a related research question using a different methodological perspective. The first study analyses data from a 2011 international survey to examine the relationship between climate change concern and ideal family size in four CEE countries: Czechia, Hungary, Poland, and Slovakia. The second study adopts a qualitative approach, employing semi-structured interviews to explore the reproductive attitudes, intentions and decisions of Hungarian women of reproductive age in the context of climate change, as well as their views on those who choose not to have children for environmental reasons. Finally, the third study, based on a nationally representative Hungarian sample, investigates how concerns about climate change and negative future prospects are associated with attitudes towards voluntary childlessness.

Chapter 3, the first study, unlike the other two, includes countries beyond Hungary, focusing on a group of nations that are often treated as a single unit in research: the Visegrád countries. All four are post-socialist countries that have experienced

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<sup>1</sup> Carrington, D. (12th July, 2017). Want to fight climate change? Have fewer children. The Guardian. <https://www.theguardian.com/environment/2017/jul/12/want-to-fight-climate-change-have-fewer-children>

Scheinman, T. (1st October, 2019). The couples rethinking kids because of climate change. BBC. <https://www.bbc.com/worklife/article/20190920-the-couples-reconsidering-kids-because-of-climate-change>

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Morgan, K. (16th December, 2021). Is parenting scarier than ever? BBC.

<https://www.bbc.com/worklife/article/20211215-is-parenting-scarier-than-ever>

<sup>2</sup> Kapelner Zs. (4th April, 2019). Szabad-e gyereket vállalni a klímaváltozás korában? Qubit.

<https://qubit.hu/2019/04/14/szabad-e-gyereket-vallalni-a-klimavaltozas-koraban>

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Wmn. <https://wmn.hu/ugy/55013-szabad-e-szulni-ebbe-a-vilagba--gyerekvallalas-kontra-klimakrizis>

Solti H. (25th October, 2023). Kevesebbet szülnének az európai fiatalok, hogy védjék a környezetet. 444.hu. <https://444.hu/2023/10/25/kevesebbet-szulnenek-az-europai-fiatalok-hogy-vedjek-a-kornyezetet>

significant fertility decline since the regime change in 1989. In response, their governments have introduced generous family policies to counteract population decline by encouraging childbearing. Building on the potential links between climate change concerns and reproductive decision-making outlined earlier, this study investigates the following question: Do those who consider climate change the most serious threat facing the world regard having fewer children to be theoretically ideal for families and themselves personally? The analysis is based on 2011 Eurobarometer data, offering insight into a period when climate change was less prominent in everyday discourse than it is today. The findings are contradictory: In Hungary, climate change concerns are positively associated with a smaller ideal family size, but only at a general level—not for respondents personally. In Czechia, there are indicators of a positive relationships between climate concerns and personal ideal family size. In Slovakia, however, a strong negative association is observed, with greater climate concerns linked to both larger general and personal ideal family sizes. The study leaves several open questions and highlights that despite similarities in social context, such as traditional gender norms and generous family policies, people’s views on childbearing in the context of climate change can differ significantly across countries. The analysis has been extended with an additional subchapter beyond the originally published study, including estimation of additional measures that allow readers to compare effect strengths of climate concern across countries. The extension also provides further interpretation of the results.

In the second study, presented in Chapter 4, we adopted a different approach, qualitative interviews, to gain a deeper understanding of how perceptions of climate change, including potential concerns, relate to childbearing decisions in Hungary. Through interviews with women aged 18–45, mostly with medium or high levels of education, we found that views on childbearing are strongly shaped by the ‘motherhood mandate’ (Russo, 1976; Szalma, 2021), the idea that a woman’s life is only truly complete if she becomes a mother, making childbearing a fundamental life-stage expectation. The interviewees generally perceived climate change as a serious problem, aligning with recent Hungarian data on climate change perceptions (European Commission, 2023). Overpopulation, however, was not seen as a pressing issue in the European context, with many expressing the view that efforts to reduce fertility rates should primarily focus on developing countries. We found a pattern of planning to have fewer children or considering alternative paths to parenthood (such as adoption) due to climate-change-related concerns. Eco-anxiety was most commonly linked to worries about the future

well-being of one's children. At the same time, people rarely viewed climate change as an individual responsibility, which may explain why even those deeply concerned did not alter their reproductive choices in response. Some interviewees resolved the contradiction between climate anxiety and the question of childbearing by seeing having children as a potential solution to climate change, believing that future generations will be more environmentally conscious and expressing a sense of responsibility to raise children in a sustainable way. Another key finding was the presence of negative, sometimes even condemnatory attitudes towards those who choose to remain childless for environmental reasons. Some interviewees dismissed such decisions as selfish or as mere justifications for not wanting children. Since the interviews were conducted between September 2020 and March 2022, during the COVID-19 pandemic, participants also reflected on how the pandemic introduced an additional layer of uncertainty into reproductive decision-making, and how it interacted with their views on climate change. For some, the crisis amplified climate concerns, while for others, the urgency of the pandemic overshadowed them.

Chapter 5, the final study, does not examine the reproductive decision-making process itself but rather individuals' attitudes towards those who choose to remain childless. The research starts from the assumption that with growing eco-concerns and more negative perceptions of the future of the next generations, people may become more accepting and understanding of voluntary childlessness. To better understand these dynamics, the study analyses data from a 2020 survey ( $n = 1000$ ) to assess whether concerns about climate change and declining future living standards predict approval of men's and women's choices to forego parenthood. Unlike findings from other European countries (Merz & Liefbroer, 2012; Rijken & Merz, 2014), overall, results show no difference regarding attitudes towards women's and men's childless choice in our Hungarian sample. Ordered logistic regression results indicate that negative future prospects are consistently linked to greater approval of voluntary childlessness, and among male respondents, approval of men's choice of childlessness rises more sharply with greater levels of negative future prospects than among women. The relationship between climate concerns and these attitudes also varies by gender: men who are more worried about climate change express less approval of voluntary childlessness of both men and women, while no such association is found among women. The contrasting results might indicate that the concept of 'climate change' is multidimensional, with its

actual threat to the well-being of future generations being just one of its many aspects. These different dimensions may each play a different role in shaping attitudes.

The structure of my dissertation is as follows. Chapter 2 takes a broader perspective on the topic: first I provide a theoretical overview, including a discussion of the Narrative Framework proposed by Vignoli, Bazzani et al. (2020) to explain fertility decisions in times of uncertainty. This framework suggests that beyond past experiences, current circumstances and structural constraints, expectations as well as personal narratives and imaginaries play a crucial role in reproductive decision-making. I briefly address other theories commonly used in the context of environmental concerns and related to reproductive decision-making. Following this, I examine the drivers and implications of childlessness, highlighting that ecological concerns have only recently started to appear in the literature on reproductive attitudes. I then provide an overview of perceptions of climate change in Hungary and summarise previous research on the relationship between macro-level concerns and reproductive decision-making (the primary focus is on climate change, but I also discuss the COVID-19 context). Given that this is a relatively new area in sociological research, studies on climate change and reproductive decision-making tend to cite the same limited set of earlier works, which makes it challenging to offer a novel literature review, but I attempt to structure and synthesise the existing knowledge to present a comprehensive picture of where the field currently stands. Research on the topic is especially scarce in Central and Eastern Europe. The pronatalist context in Hungary, discussed at the end of Chapter 2 (Background), characterised by strong traditional family values and the prevailing social norm that everyone is expected to become a parent (Szalma & Takács, 2018b), adds further dimensions to the analysis compared to studies conducted in Western countries. This dissertation addresses this gap by presenting empirical insights from Hungary in Chapters 3 to 5. The thesis concludes with a discussion that synthesises the findings within the theoretical framework, discusses limitations, and outlines potential directions for future research.

## **2. Background**

### **2.1. Theoretical framework**

#### **2.1.1. Reproductive decision-making in uncertain times: the role of narratives of the future**

For understanding the connection between concerns about the uncertain future in times of climate change and reproductive decision-making, the work of Vignoli, Bazzani et al. (2020) is highly valuable. The authors synthesise and classify various definitions of uncertainty given in recent economic and sociological literature and conclude that the common feature in these definitions is that future outcomes cannot be measured by probability. Uncertainty might stem from social interactions, or from the lack of available information. However, there is also ‘fundamental uncertainty’, under which effect of present actions cannot be forecast, since there are too many possible outcomes, and the role of actions and elements of it are unknown (Vignoli, Bazzani et al., 2020). Fertility decisions have always been taken under the conditions of fundamental uncertainty, since lessons learned in the past do not always apply to the present or to the future. However, globalisation (Blossfeld et al., 2005) and recent societal changes brought new forms of uncertainties. Beck (1992) argues in his risk society approach that modern uncertainties influence individual actions and impact future generations. He later revised his theoretical framework (Beck, 2015) to integrate “fabricated risks”, which are the results of social construction, and are dependent on human decisions. This new category includes climate change, technological advancements, and terrorism, which affect everyone across time and space. The spread of the COVID-19 can also be interpreted as such (Antonilli, 2022).

Guetto, Bazzani and Vignoli (2022), drawing on Dewey’s work (1922/1930), describe how a course of action guided by habit, when interrupted, leads individuals to experience uncertainty about the future, and to reinterpret the situation. In this process, both past experiences and future expectations play a role in evaluating potential future actions. This idea was also proposed in the work of Bernardi et al. (2019), when they analysed the life course as a behavioural process. The authors argued that decisions of individuals are shaped by previous experiences (knowledge, expertise, values and attitudes), summarised as ‘shadows of the past’, as well as by current social environments. They also highlight, however, the role of (often uncertain) expectations about the consequences of their actions, that are labelled as ‘shadows of the future’. The authors

claimed that individuals seek certainty in their decisions, relying on subjective beliefs about what will best serve their wellbeing (Bernardi et al., 2019).

The *Narrative Framework*, a future-oriented framework proposed by Vignoli, Bazzani et al. (2020) supplements existing theories explaining fertility decision to help understanding these decisions taken under the state of fundamental uncertainty. Regarding the future, it makes a conceptual distinction between expectations, imaginaries and narratives. The decision process about having or not having children is described as follows: *Expectations* are formed on the basis of *constraints* and *past experiences* and are the foundations for *imaginaries*. *Imaginaries* are formed on an abstract level and may deviate from future *expectations*. These imaginaries build on the current situation, include normative value orientations, and can relate to both individual goals (e.g., to have a large family) and collective outcomes (e.g., to live in a carbon-free society). They may be wishful, representing hopeful visions of the future, or rather frightening. *Narratives of the future*, however, are less abstract, contain all previous elements, and these can be sorted (Vignoli, Bazzani et al., 2020). Fertility choices, like other life course choices, require a conscious narrative of the future, including the perceived steps needed to achieve one's imagined goal. In times of uncertainty, expectations, imaginaries, and future narratives can either encourage or discourage parenthood (Guetto et al., 2022). Narratives of the future have several functions in decision-making: selection, interpretation, causal modelling, and action support. Through selection and interpretation, individuals identify and make sense of the elements of a narrative that they prioritise in the decision-making process; thus, narratives have the power to reduce world complexity. Moreover, narratives provide reasons for action: they offer both rational and emotional support and reinforcement for making decisions (Vignoli, Bazzani et al., 2020).

The Narrative Framework proposed by Vignoli, Bazzani et al. (2020) provides a valuable lens for understanding the role of uncertainty in reproductive decision-making. I argue that this framework can be applied to examine the reproductive decision-making process under uncertainty related to climate change, just as Guetto et al. (2022) used it to explain fertility decisions shaped by the uncertainties arising from the COVID-19 pandemic. In the Discussion (Chapter 6), I will further elaborate on this theoretical framework and apply it to the findings of my thesis, using an illustrative example.

In the following paragraphs, I briefly outline some other theoretical models commonly used to explain pro-environmental behaviour. These models can help

understanding how environmental concerns are typically conceptualised in relation to individual behaviour.

### **2.1.2. Environmental attitudes and their relation to behaviour**

Discussing the nature of environmental attitudes, Gifford and Sussman (2012) explore how these attitudes are linked to behaviour. They demonstrate that, although environmental attitudes can shape behaviour, there are numerous barriers to behavioural change. In their book chapter (Gifford & Sussman, 2012), environmental attitudes are defined as concern for the environment, and having pro-environmental attitudes means caring about environmental issues. Studies examining the relationship between attitudes and behaviour have produced inconsistent results, showing that attitudes do not always strongly predict pro-environmental behaviour across different contexts.

A range of factors influence environmental attitudes. These include the general level of environmental concern within a society, as well as individual characteristics such as age, gender, socioeconomic status, religion, political orientation, direct experiences with nature, education, and environmental knowledge. Differences also appear across countries and between urban and rural settings. Gifford and Sussman (2012) emphasise that values (e.g. postmaterialist, altruistic etc.) and personality traits (such as self-efficacy) are distinct from environmental attitudes but can have an important influence on them.

To better understand the attitude-behaviour link, Gifford and Sussman (2012) present two widely used theoretical models explaining the relationship (the theory of planned behaviour, and the value-belief-norm theory) and also point out their limitations.

#### ***Theory of planned behaviour***

In the central focus of the theory of planned behaviour (Ajzen, 1991; Ajzen & Klobas, 2013) there are intentions to perform a behaviour, which are formed by the following considerations: attitudes toward the behaviour (the degree of favourable or unfavourable evaluation of the behaviour, taking the believed consequences of the behaviour in account), subjective social norms (social pressure or expectations of significant reference persons how to behave in a situation), and perceived behavioural control (the confidence in one's ability to perform a behaviour). A meta-analysis of psycho-social determinants of pro-environmental behaviour by Bamberg and Möser (2007) confirmed that attitudes and perceived behavioural control are significant predictors of pro-environmental behavioural intentions. However, the study found that social norms play a more indirect role in shaping such intentions. The researchers

conceptualised personal moral norm instead of social norms as a third independent determinant of intention, and this approach was supported by their findings.

### *The value-belief-norm theory*

The value-belief-norm model is an extension of the norm activation model (NAM; Schwartz 1977 in the context of altruistic behaviour; Schwartz and Howard 1981). The NAM explains pro-environmental behaviour as the result of activated personal norms, such as feelings of moral obligation (feeling that it is the “right thing to do”) to act in environmentally responsible ways. As Steg and Nordlund (2018) summarise, personal norms are activated through four key factors: problem awareness (or being aware that there is need to act), ascription of responsibility (a sense of personal responsibility for the environmental problems), outcome efficacy (belief that one’s actions can reduce these problems), and self-efficacy (belief in one’s own ability to take action). These norms are stronger when individuals are aware of the environmental harm caused by their own behaviour, feel personally accountable, and believe both that their actions can make a difference and that they are capable of performing them. Although the model has proven useful in explaining specific or general pro-environmental behaviours, not all studies have included all four components (Steg & Nordlund, 2018).

Building on NAM, the value-belief-norm (VBN) theory (Stern, 2000) introduces a broader framework by linking personal norms to value orientations (guiding principles in life) and ecological worldviews (beliefs about the relationship between humans and the environment). It proposes that individuals’ worldviews are shaped by their underlying values: egoistic values are negatively associated with ecological worldviews, while altruistic and biospheric values are positively related. Worldviews then predict problem awareness, the first component of the NAM. As Steg and Nordlund (2018) explain, the theory assumes a causal chain in which each element affects the next, while also potentially having weaker direct influences on later elements in the chain.

Cognitive dissonance theory (originally proposed by Festinger, 1957) offers a complementary perspective on the link between environmental attitudes and behaviour. It suggests that individuals are motivated to maintain consistency between their attitudes and actions. When people hold pro-environmental attitudes but act in ways that contradict them, they experience psychological discomfort, which may lead them to change either their attitudes or their behaviour to restore alignment (Gifford & Sussman, 2012; Thøgersen, 2004).

The VBN theory has been supported across various cultural contexts and has been effective in explaining a range of low-cost pro-environmental behaviours and intentions, such as policy support and willingness to change behaviour. However, similarly to NAM, it tends to be less predictive of high-cost behaviours, where the TPB with its broader consideration of non-environmental motivations may perform better. When behavioural costs are high, individuals may reduce feelings of moral obligation by denying responsibility or the effectiveness of their own actions (Steg & Nordlund, 2018).

### ***Environmental citizenship***

A further approach that is relevant in this context is the concept of *environmental citizenship*, as developed by Dobson (2007). The notion of environmental citizenship highlights long-term normative commitments to sustainability in contrast to short-term motivators, external incentives or rational cost-benefit calculations. According to this view, pro-environmental behaviour stems not from individual gain but from a sense of responsibility towards others and future generations. This perspective aligns with value-based approaches such as the VBN theory but goes beyond them by framing environmental action as an ethical commitment grounded in civic responsibility. Since pro-environmental attitudes and intentions do not always translate into action, environmental citizenship may support more consistent behavioural engagement over time by fostering a deeper, internalised motivation. I return to this concept in Chapter 5, where I explore how nationally embedded pronatalist values may act as barriers to the implementation of cosmopolitan ideals of environmental citizenship in Hungary.

#### **2.1.3. Connecting reproductive considerations with environmental beliefs**

Some studies have proposed that not having children can be understood as a radical form of pro-environmental behaviour, given the long-term ecological footprint associated with reproduction (Murtaugh & Schlax, 2009; Wynes & Nicholas, 2017). However, such interpretations remain controversial, both empirically and normatively. As will be shown later in this thesis, in the Hungarian context, the choices of voluntary childlessness or having fewer children are rarely justified by ecological concerns. It is therefore not self-evident that non-parenthood would function or be interpreted as a form of pro-environmental action: not all people seriously concerned about environmental degradation reject the idea of parenthood, and environmental concerns may also coexist with desires to have children and raise them with ecological values. Therefore, rather than assuming a specific behavioural outcome or a consistent pro-environmental logic, I treat

environmental concern as one among several future-oriented considerations that may shape how people think about reproduction.

The decision to have a child is often discussed following the theory of planned behaviour. It is argued to be also applicable on decisions not to have a child (Ajzen & Klobas, 2013; Brini, 2019), not only on positive fertility intentions. However, the theory is often criticised for positing rational actors and rational choice behind all childbearing decisions; nevertheless, Ajzen and Klobas (2013) claim that fertility decisions are rarely made upon reviewing all available information and careful planning, these are often based on inaccurate and incomplete, irrational beliefs, and are biased. Nevertheless, the TPB often fails to predict actual behaviour, oversimplifies complex decision-making processes, and neglects the role of emotions, habits, and contextual meaning-making (Sniechotta et al., 2014). These limitations could be especially relevant when addressing reproductive decision-making under climate change, where people are not simply weighing options in a rational way, but navigating uncertainty, values, and broader cultural narratives.

Having reviewed dominant theoretical approaches, I now clarify how these relate to the empirical chapters of the dissertation, which address different stages of the reproductive process. The first article examining ideal number of children both in general and for oneself personally can be understood as reflecting attitudes and, to some extent, personal intentions. The second article explores individuals' reproductive decision-making among climate-related and other macro-level concerns, while the third article focuses on attitudes towards voluntary childlessness, shedding light on the social meanings and moral evaluations attached to non-parenthood. While not all contributions engage with behaviour directly, they each capture different moments in how people make sense of childbearing in the context of broader uncertainties. For this reason, I find the Narrative Framework (Vignoli, Bazzani et al., 2020) more appropriate than the above discussed models (such as the TPB which is often extended with elements from models based on personal values and normative beliefs). This framework does not assume rational planning or behavioural prediction but instead theorises how individuals develop future narratives in the context of uncertainty. It does not rely on the assumption that non-parenthood is necessarily interpreted as a pro-environmental act. The Narrative Framework allows for the inclusion of emotionally charged concerns, including those related to climate change, and focuses on how these are incorporated into imagined life paths.

As Vignoli, Bazzani and colleagues (2020) argue, a key limitation of the TPB is that, by relying on a deterministic framework, it underestimates individuals' capacity to depart from expected behavioural trajectories, unlike the Narrative Framework, which highlights the role of human agency. The TPB elements can still be found in the Narrative Framework among structural constraints shaping action, but people can deviate from what is expected by constructing narratives drawing on their imaginative capacity to envision alternative futures.

## **2.2. Empirical findings**

### **2.2.1. Voluntary childlessness**

Although the research topic of my thesis is not restricted to examining reasons behind the intention to remain childless, the literature often explores this outcome in the context of macro-level concerns. Therefore, in the following few paragraphs, I outline key aspects related to (voluntary) childlessness, including its prevalence, the motivations behind not having children, related societal attitudes, the social stigmas associated with it, and gender differences. Previous research on the topic of childlessness has shown that behind the fact of not having children many causes may be seen including own preferences and choices as well as conditions that are difficult to change (Brini, 2019, 2020; Szalma & Takács, 2014, 2018b). Many scholars differentiate between unintentional and intentional causes distinguishing those who are childless due to biological reasons or constraining regulations and legal barriers regarding fertility etc. from those whose personal choice is to postpone childbearing or not to have children at all due to practical difficulties regarding their circumstances or by cause of motivational or normative considerations. The categories of voluntary and involuntary childlessness are rather the two ends of a scale, and the extent to which childlessness is voluntary can vary on a range of a spectrum (Allen & Wiles, 2013; Mynarska & Rytel, 2018). At one end, the term *childfree* is generally applied to those who are not planning and have no desire to have children (Agrillo & Nelini, 2008). Blackstone and Stewart (2012) use *childfree* and *voluntarily childless* interchangeably, while others highlight a distinction: Basten (2009), for instance, preferred to use the more neutral term *voluntary childless*, and reserved *childfree* for cases where the explicitly political meaning of the term was intended. A further nuance lies in the meanings of the words themselves: *childless* can be interpreted as the absence of children, while *childfree* implies being free from them. Differences may

also arise in terms of the certainty of one's decision. Not all voluntarily childless individuals can be described as childfree: while some have no desire to have children at all, others might forego childbearing for various reasons (Morning Consult, 2020), even if they do not entirely lack the desire for children.

There are regional differences in the prevalence of voluntary childlessness. The German-speaking countries and some other western European countries have relatively high rates of intentional childlessness, while in eastern European countries the level of intentional childlessness is low (Miettinen & Szalma, 2014). In Hungary, voluntary childlessness is not the desired lifestyle for most women and men, however, several factors might ultimately lead to it (Szalma & Takács, 2015). Evidence from Italy shows that voluntarily childless women often share certain socio-demographic characteristics: they tend to be more highly educated, less religious, and less likely to come from large families, while economic circumstances appear to play a smaller role (Tanturri & Mencarini, 2008). Hungarian interview-based research has revealed that men were more likely than women to explicitly describe themselves as voluntarily childless, and this decision was observed not only among the highly educated but also among less educated men. They also talked about their childfree decision more openly than women. This does not necessarily mean that voluntary childlessness is more common among men, but rather suggests that they may feel less affected by the strong normative pressure that prescribes parenthood as compulsory, especially for women (Szalma & Takács, 2018a).

### ***Pathways to childlessness***

Decisions about “childbearing” might not be the same as decisions about “staying childless/childfree”, in the sense that studying the former supposes a positive fertility intention, while the motive to remain childless is a negative fertility intention. Previous scholarship's attention was focused mostly on the positive intentions and their realisation (Brini, 2019).

There are differences in how people arrive at the decision of not having children at all. Some decide early (in high school or early in a relationship), while others arrive at it gradually through postponement (Callan, 1983). The re-interpretation of unfulfilled parenthood plans as a conscious choice can reduce cognitive dissonance, but it can work the opposite way as well, as some postponers might have always intended to remain childless but hesitated to acknowledge it due to internalised societal pressure to become parents (Szalma & Takács, 2018b). Longitudinal evidence shows that postponement plays a greater role in shaping childless expectations than other socio-demographic and

situational factors (Rybińska & Morgan, 2019). Reasons of postponement of first childbearing often include practical difficulties rather than theoretical considerations (Szalma & Takács, 2015). The absence of a steady relationship or a suitable partner is a major factor (Allen & Wiles, 2013; Buhr & Huinink, 2017; Szalma & Takács, 2012; 2015), but prolongation of years of education, economic uncertainty or difficulties in establishing work-life balance also contribute to postponement (Miettinen & Szalma, 2014).

Demographic trends show a general pattern of postponement of family formation in Europe during the past few decades (Billari et al., 2006), a pattern that can also be observed in Hungary, which might be a contributing factor to the increasing childlessness rates. Between 2017 and 2022, childlessness rates in Hungary among 35–39-year-old women increased from 25% to 30%. In the early 2000s, only 10% of people in this age group were childless (Kapitány, 2023). However, the trend of postponement has been moderating since 2011. Hungarian women in 2011 were 28.3 years old in average at the time of their first childbirth, while in 2017, the average age was 28.6 (Kapitány & Spéder, 2018), and 28.8 in 2023<sup>3</sup>.

### ***Implications of being childless***

A Dutch study (Keizer et al., 2010) found that among men aged 40–59, childlessness had its highest impact on economic factors such as income or type of employment. Childless men had lower incomes than both cohabiting and separately living fathers. This supports the *fatherhood premium* thesis, which holds that fathers regard themselves primarily as providers for their families, therefore they work and earn more than childless people (and women). In Hungary, the breadwinning father role is prevalent, and such expectations toward fathers have not declined (Makay & Spéder, 2019). Nevertheless, the fatherhood premium thesis does not apply to all fathers as many cannot fulfil the provider role (Takács, 2017; 2020). What is a premium for fathers, seems to be a cost for mothers: in opposition to the *fatherhood premium* thesis, the phenomenon of *motherhood penalty* means a burden for mothers on the labour market. Overall pay gaps between mothers and childless women were prevalent in 60% of the countries examined in a study on European countries and the US, Canada, Israel and Australia (Budig et al., 2012). The motherhood penalty is found to be higher for highly educated, as Brini (2019)

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<sup>3</sup> Source: Eurostat, Fertility indicators [demo\_find], <https://ec.europa.eu/eurostat/databrowser/bookmark/303886b0a-c888-451c-87cb-5d0192e4ae2d?lang=en>, last accessed: 06.03.2025.

summarises based on literature on the topic. In Hungary, the opportunity cost of motherhood is higher than the opportunity cost of fatherhood (Plantenga et al., 2012).

Thus, being childless seems to have different implications for women and men. The voluntary childless choice is a gendered issue not only from the aspect of labour force participation, but also regarding social expectations. In this sense, such decision is more significant for women, since motherhood is often seen as an elemental part of being a woman (Szalma & Takács, 2018a). For men, expectations about the male gender role are often met whether or not a man has offspring (Agrillo & Nelini, 2008). In many societies, including Western ones, where women supposedly have full autonomy, strong pronatalist pressures persist and reinforce norms that frame parenthood as natural and essential for a fulfilling and meaningful life (Krähenbühl, 2022). A UK study of millennial mothers found that while they externally expressed positive attitudes towards voluntarily childless women, internal prejudices persisted among them. This contrast highlights the strong presence of gendered social norms, particularly the expectation that women should desire children simply because they are women (Colledge & Runacres, 2023). However, despite the pressure there are people whose active choice is this path, furthermore, perceiving reactions of the society as a stigma is not at all true for everyone. Some even benefit from their childless state, e.g. childless women conform to the “ideal worker” stereotype thus earn more (Turnbull et al., 2018), and childless men seem to show greater satisfaction with life compared to fathers in a study from the Netherlands (Keizer et al., 2010), and many childless individuals do not even engage with the concept of coping (Sapleton, 2018).

### ***What shapes attitudes towards voluntary childlessness?***

While attitudes towards voluntary childlessness are more accepting in Northern and Western Europe, they remain particularly negative in Central and Eastern Europe (Merz & Liefbroer, 2012; Rijken & Merz, 2014; Sobotka & Testa, 2008). Recent data confirms these patterns: when European countries surveyed in the European Social Survey (European Social Survey European Research Infrastructure [ESS ERIC], 2023)<sup>4</sup> are ranked by their mean approval scores, only three CEE countries: Croatia, Slovenia and Poland are among the first twenty, with their particularly high levels of approval of voluntary childlessness (49%, 51% and 48%, respectively) compared to other countries

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<sup>4</sup>Figure 1 that displays the approval of a person’s choice never to have children in the surveyed European countries can be found in the Appendix.

of this part of Europe. However, if we consider the share of those who *disapprove or strongly disapprove* of a person's choice not to have children, the difference is striking between the regions, as there are 12 Northern or Western European countries with disapproval rates below 15% (followed by Portugal, France, Austria and Italy with rates between 15-25%), and it is at least 30% (and as high as 65% in Bulgaria, the country with the most negative attitudes) in CEE countries, except for Slovenia (27%)(ESS ERIC, 2023).

Attitudes, however, have generally become more accepting across Europe since the early 2000s. This is reflected both in the overall increase in mean approval and in the fact that by 2018, at least 40% of respondents in half of the surveyed countries *approved or strongly approved* of voluntary childlessness (ESS ERIC, 2023). This shows a significant rise from 2006 (ESS ERIC, 2018), when this was true for only a quarter of the countries. Regional differences, though, have remained largely unchanged. It was clearly observable in 2006 that attitudes were most rejecting in CEE countries, however, a notable change since then is that disapproval rates have declined also across this region. For comparison, the average proportion of respondents with disapproving attitudes in the CEE countries surveyed in both ESS waves discussed here dropped from 59% in 2006 to 44% in 2018. This is still higher than the overall European average, which decreased from 36% to 26% over the same period (ESS ERIC, 2018; 2023).

Hungary remains among the countries with relatively high disapproval rates towards the choice of voluntary childlessness, though there has been a notable decline since 2006. While the share of those disapproving of voluntary childlessness was 50% in 2006 (with 18% strongly disapproving), it decreased to 40% by 2018. However, this change did not primarily occur among the most strongly opposing respondents, as the share of those strongly disapproving remained relatively high at 14%. Meanwhile, approval rates have not increased; in fact, they have slightly declined, from 7.8% in 2006 to 6.5% in 2018 (ESS ERIC, 2018; 2023).

According to the literature on the topic of voluntary childlessness, a series of individual- and macro-level factors are shown to be related to attitudes towards this life choice, these are discussed in detail in Chapter 5. To summarise here, individuals holding more favourable attitudes towards voluntary childlessness are usually women, younger, non-religious, and highly educated (Dimitrova & Kotzeva, 2022; Koropecj-Cox & Çopur, 2015; Merz & Liefbroer, 2012; Rijken & Merz, 2014), childless themselves (Koropecj-Cox & Pendell, 2007; Maftei et al., 2021; Rijken & Merz, 2014), and less

traditional in their attitudes (Koropeckyj-Cox and Çopur, 2015; Tanturri & Mencarini, 2008). Regarding family status, prior research has found that individuals who are either married or widowed have more traditional views about marriage, children and voluntary childlessness (Dimitrova & Kotzeva, 2022; Gubernskaya, 2010; Rijken & Merz, 2014). Among country-level factors, gender equality seems to play a positive role in shaping attitudes towards voluntary childlessness (Eicher et al. 2016). There is no evidence for childcare availability on the acceptance of voluntary childlessness in Europe (Merz and Liefbroer 2012; Eicher et al. 2016), and neither childlessness rate nor maternal employment rate had any effect on the acceptance of this choice (Eicher et al. 2016).

### **2.2.2. Macro-level threats with possible implications on reproductive decision-making**

#### ***Climate change: perceptions, responsibility, environmental behaviour***

Climate change and its far-reaching consequences are the focus of research across multiple scientific disciplines, as they pose significant challenges to ecosystems, societies, and economies; however, Bhatasara (2015) notes that sociology was relatively slow in engaging with climate change and its societal consequences. Human well-being and future generations will be affected by rising global temperatures, extreme weather events, and environmental degradation, and beyond its direct physical impacts, the phenomenon of climate change shapes public perceptions, societal attitudes, political agendas, and individual decision-making. Studies connecting climate change and fertility often focus on the effects of temperature and climate change on conception rates, pregnancies or reproductive health outcomes (Davenport et al., 2020; Hajdu & Hajdu, 2022; Muttarak, 2021). Another dominant stream of research regarding fertility, which is the core focus of this thesis, examines how climate change and related concerns shape how people think about reproduction and family planning in an uncertain future (Helm et al., 2021; Ivanova & Balbo, 2024; Krähenbühl, 2022; Nakkerud, 2024, Zimmermann et al., 2024). The questions of responsibility, adaptation, and mitigation are central concerns for both the public and policymakers.

Perceptions of climate change, that are rapidly changing over the past decades (as discussed in Chapter 3 of this thesis), are shaped by various structural, psychological, social, and cultural factors and processes, each driven by different objectives (Weber, 2016). To provide an overview of the most recent trends, I will briefly summarise current data on climate change perceptions in the European Union (European Commission, 2023). In 2023, climate change was considered as the third most serious problem in the

EU, with 17% of citizens identifying it as the most serious issue and 46% ranking it among the most serious threats. It followed poverty, hunger, and a lack of drinking water, as well as armed conflicts, that likely reflects the impact of Russia's invasion of Ukraine in February 2022. Climate change was most frequently cited as the single most serious problem in Northern and Western European countries, with Sweden leading at 41%. In Central and Eastern Europe, the share of respondents selecting climate change as the most serious problem ranged from 4% in Latvia to 12% in Croatia, with 11% of Hungarians sharing this view. In EU countries, younger and better-educated individuals, those with financial stability, and those who identified as belonging to the upper class were more likely to consider climate change one of the most serious problems (European Commission, 2023).

Responsibility for tackling climate change was primarily attributed to the EU (56%), national governments (56%), and businesses and industry (53%). In Hungary, respondents saw businesses and industry as the main actors responsible (60%), and national governments (48%) and the EU (41%) to a lesser extent. Overall, 35% of EU citizens regarded themselves as personally responsible for addressing climate change, with Malta leading in this respect (63%), while Czechia (16%), Bulgaria, and Poland (17%) had the lowest shares. In Hungary, 18% of respondents saw themselves as responsible, whereas 24% believed the responsibility lay with environmental groups. Regarding individual action, 63% of EU citizens reported having recently taken steps to fight climate change. In Hungary, this figure was 61% (relatively high compared to some other Central and Eastern European countries). The lowest share was recorded in Romania, where only 29% reported taking action (European Commission, 2023).

Gender differences are evidenced regarding climate change concern. Earlier waves of the Special Eurobarometer surveys (e.g. European Commission, 2011, 2021) support study findings of a general tendency for men to be less concerned about climate change than women. Duarte et al. (2017) found that already among adolescents, girls display stronger pro-environmental attitudes than boys, a pattern that Arnocky and Stroink (2010) explain by showing that gender differences in environmental concern are fully mediated by emotional empathy, which tends to be more frequently expressed by women. The gender difference in concern is, however, neither universal nor consistently directional across all regions. Poortinga et al. (2019) examined climate change attitudes across 23 European countries on data from the European Social Survey Round 8 and found that men were generally more likely to be sceptical about climate change and less

concerned about it than women. Interestingly, though, men perceived the negative impacts of climate change as more severe than women did. Gender differences in climate-change-related worry were more pronounced in Northern European countries than in Eastern and Central Europe, while Western Europe showed no significant difference between men and women in this regard. However, regarding the perception of the impacts of climate change, gender differences were strongest in Western Europe, though these were also present, albeit to a lesser extent, in Eastern and Central European countries (Poortinga et al., 2019).

One of the assumptions of my thesis is that in regions where the most severe consequences of climate change are getting increasingly visible, people are becoming more aware of and concerned about the phenomenon (Bodor et al., 2024), thus reflecting on, worrying about, and forming impressions of climate change may influence their attitudes or long-term decision-making. How do people interpret and make sense of this broad and multifaceted concept? Analysing the role of direct experience in risk perception, Whitmarsh (2008) found that, while flood victims often consider climate change to be an issue of personal importance, they do not necessarily have a greater knowledge of or concern about it compared to those without flooding experience. Despite experiencing environmental threats firsthand, flood victims tend to attribute local flooding to immediate factors, such as blocked ditches or roadworks, rather than connecting it directly to climate change (Whitmarsh, 2008). This highlights that direct experience does not always enhance risk perception related to macro-level issues, and people may perceive environmental threats without linking them to larger global problems. Blanton's (2025) qualitative study conducted in the U.S. is another example of when interviewees more readily respond to the immediate and visible, local risk of poor air quality than to the abstract notion of climate change. Rüttenauer (2023) found in the UK that individual experiences of climate-related events such as floods and extreme heatwaves were associated with stronger beliefs in climate change, however, direct exposure did not necessarily lead to changes in environmental behaviour (sustainable shopping, energy saving etc.), not even among those who were more likely to believe in climate change (Rüttenauer 2023). These findings emphasise the complex nature of climate change concern. It is not solely about recognising the environmental process, the possible threats but might also involve personal judgements about its urgency, severity of its expected consequences and the level of motivation to address it (Lo & Chow, 2015). Applying construal level theory, which suggests that psychological distance influences

how people mentally represent distant and closer events, Spence et al. (2012) found in a UK sample that lower psychological distance from different dimensions of climate change (spatial or geographic, temporal, social, and uncertainty) was associated with heightened concern. Personal experiences with climate change presumably reduce psychological distance, thereby, contrary to findings discussed above, strengthens intentions to take action, according to a study on 24 countries (Broomell et al., 2015).

### ***Linking environmental concerns and reproductive attitudes and intentions***

The three articles forming the core of my dissertation (Chapters 3–5) focus primarily on climate change and its relationship with fertility intentions and attitudes towards voluntary childlessness. In these chapters I provide an extensive review of the existing literature on the topic; therefore, here, I offer only a brief overview and supplement the studies cited in the following chapters with additional relevant research findings.

A key resource in mapping the literature on this topic is the systematic review by Dillarstone et al. (2023), which synthesises relevant studies published between 2012 and 2022, screening more than four hundred papers from six databases. As evidenced by this study, the literature on the relationship between climate change-related concern and reproductive intentions and attitudes (positive and negative evaluations towards having children) is very recent and still limited, as it includes only thirteen studies published since 2012 with no geographical restrictions. Of the studies included in this review, only two focused on the ‘Global South’ (and these studies highlighted certain motivating factors behind reproductive decision-making in relation to climate change that were less prominent in research conducted in other regions) (Dillarstone et al., 2023).

Research shows that there are multiple ways in which climate concerns intersect with reproductive attitudes. On the one hand, a small but vocal segment of society explicitly frames childbearing as an environmental issue, they reduce the number of offspring or forego parenthood to minimise their ecological footprint (Allen & Wiles, 2013; Helm et al., 2021; Krähenbühl, 2022; Schneider-Mayerson, 2021). This perspective, while present, appears to be a minority position (Miller, 2018; Morning Consult, 2020). Ethical considerations related to childbearing in the age of climate change are discussed in often quite philosophical writings (Cafaro, 2022; Rieder, 2016; Torpman, 2021), which bring many perspectives into the discourse of environmental and reproductive ethics, e.g. that reproductive timing can affect world population to a great extent considering the number of simultaneously living generations (Torpman, 2021).

The starting point of some of these articles is the argument of Murtaugh and Schlax (2009) and of Wynes and Nicholas (2017), that as an individual, the most one can do to lessen their ecological footprint is to have fewer children. The problems behind this statement are analysed e.g. by van Basshuysen and Brandstedt (2018), who also draw attention to the importance of lifestyle choices of children which might depend on parenting. Here, Dobson's (2007) concept of 'environmental citizenship' comes into play, which emphasises a commitment to sustainability by recognising that individuals' rights and responsibilities extend beyond geographical borders and that both public and private actions have environmental consequences. In Zaremba et al. (2022), participants' attitudes towards climate change were stemming from their core ethical values, thus a climate-friendly behaviour was seen as a moral imperative. The ethical aspects of childbearing have been also discussed in the media according to a Swedish study (Bodin et al. 2019), and having children was depicted as unfriendly to the environment.

A different kind of climate-related reproductive concern is more prevalent: the fear of bringing children into a "doomed" world. Here, it is not the direct environmental impact of childbearing that matters, but rather anxiety over the quality of life that future generations will face in a climate-affected society (Helm et al., 2021; Ivanova & Balbo, 2024; Krähenbühl, 2022; Nakkerud, 2024). A negative relationship between future uncertainty or climate change concerns and reproductive attitudes is commonly found in these studies, e.g. as in Ivanova and Balbo (2024) for the Netherlands, the likelihood of having children decreased when the future of the next generation was perceived as worse than the present. While most studies examining this relationship confirm the negative association (Dillarstone et al., 2023), there are also studies with opposite results or that find no evidence for such an association. See for example de Rose and Testa (2015a), who analysed 2011 data from the EU, and found that the association between climate change concern and additionally intended children was statistically significant only at the individual level, in the group of people already having one child. Also, a recent Swedish study found no direct link between climate worries and fertility outcomes or intentions, as climate concern did not predict ideal or actual number of children in regression models. Interestingly, while some participants retrospectively cited climate change as a reason for having fewer children, the analyses suggest that their decisions might have been more strongly influenced by other factors, such as younger age and marital status (not being in a relationship). According to the authors, this aligns with previous findings that, although climate change is considered as relevant in reproductive decision-making, it is rarely the

sole determining factor (Jylhä et al., 2025). Schneider-Mayerson (2021) conducted research among climate-concerned Americans, and identified four dimensions of the connection between reproductive choices and environmental politics, out of which some were positive associations between environmental concerns and having children. A belief was present that parents, due to a direct and personal connection with the distant future, are likely to be more engaged in environmental politics than non-parents; also, children were seen by some as possible future environmentalists (Schneider-Mayerson, 2021).

However, the direction of the relationship is not always clear. When the question is reversed—whether the number of (planned or existing) children predicts the level of concern about climate change—de Rose and Testa (2015b) found that the most concerned were those who were planning to have one or two additional children; and the effect had a reversed U-shape for actual family size, where parents of two children were the most concerned about climate change (de Rose and Testa, 2015b). A recent longitudinal study (Peters et al., 2023) addressed the gap in the knowledge about the hypothesised reciprocal relationship between environmental concerns and childbearing to explore the direction of the relationship: whether environmental concern prevents childless individuals from having children or whether parenthood shapes environmental concern. The study, examining cohorts born between the 1960s and the early 1980s on a German sample, found that environmental concern in early life did not predict the number of children individuals had by age 40 or the timing of their transition to parenthood. However, among those born before 1970, individuals with major environmental concerns tended to delay their first birth. Additionally, early child-bearers (those who became parents before age 25) were more likely to report significant environmental concerns at any age compared to childless individuals, supporting the legacy hypothesis, which suggests that parenthood increases environmental concern due to worries about the future conditions their children will inherit. The results should be interpreted in light of the fact that not all cohorts in this study were exposed to the climate change debate during their childbearing years, while more recent birth cohorts, whose fertility desires have been forming in recent years, are likely to have greater concerns about the planet’s future (Peters et al., 2023).

### ***COVID-19 and fertility***

When examining climate change as a macro-level threat and its relationship with reproductive decision-making, we cannot overlook the context introduced by the outbreak of COVID-19 (the coronavirus disease of 2019, declared as a pandemic by the World Health Organization on 11th March, 2020). Initially, COVID-19 as a potential source of

macro-level concern was not within the focus of my research, but I had to integrate it as it significantly influences how my findings should be interpreted. Studies have drawn connections between COVID-19 and climate change from a viewpoint that both crises are global challenges with existential threats, thus behavioural responses can be similar (Herrero & Thornton, 2020).

Pandemics bring uncertainty and confusion regarding health, the economy, social relations, and the question of when they will truly be over (Taylor, 2019), and general expectations of the future (Comolli, 2023; Guetto et al., 2022). Misinformation and the rapid spread of (often fake) news might additionally deepen the feeling of uncertainty. These circumstances collectively shape long-term decision-making processes.

When analysing how and why COVID-19 might have affected actual fertility decisions, researchers often emphasized that the main factors were practical ones such as having limited access to the healthcare system (Aydin et al., 2022), having to give birth without the presence of the father (Eri et al., 2022), financial insecurity (Malicka et al., 2021), looking after children at home etc. (Golovina et al., 2023), but there were also studies highlighting the importance of macro-level factors such as perception of the future (Guetto et al., 2022) and mental well-being (Malicka et al., 2021). Based on raw birth rates, Aassve et al. (2021) examined whether COVID-19, similar to previous pandemics, brought about a decrease in the number of births. Of the 22 countries examined, the raw birth rates decreased significantly in southern European countries, but the largest decrease could be observed in Hungary. When studying the same countries, Sobotka et al. (2021) also found the largest fertility decrease in Hungary. The authors explained this by referring to the increased number of births just before the outbreak of COVID-19 due to the pronouncedly pronatalist Hungarian population policies: in October and November 2020, the number of births in Hungary even increased compared to previous months, while in most countries the birth rates already started to decrease in these months. However, as a result of COVID-19 lockdowns arriving to Hungary, the surplus growth generated by pronatalist family policy incentives had already melted away by January 2021 (Sobotka et al., 2021). A new positive turn followed this drop in November 2021, these births were conceived during winter lockdowns, as the second wave of the pandemic subsided. Soon after that, a next sharp drop in the number of births was observed in most countries (Sobotka et al., 2024). A Hungarian qualitative study echoes findings that the pandemic primarily influenced reproductive decisions through the increased burden on the healthcare system, with particular concerns about maternity care and childbirth during

the crisis. Experiences of social distancing and changes in working arrangements also played a role, sometimes facilitating and sometimes hindering family plans, while financial security remained a key factor under the crisis (Szalma & Takács, 2022b)

Comolli (2023), analysing Swiss Household Panel data, found that short-term fertility intentions change in correlation with the worsening social climate and the increasing social uncertainty. During the COVID-19 pandemic, intentions of childless individuals were more uncertain, and parents' intentions were more negative in response to the more negative and unpredictable social climate. Italian researchers argued that studies on fertility decisions made in uncertain times should be based on the recognition that uncertainty can feed not only on the past, but can also be closely linked to the perception of the future: “the shadow of the past is substantially less relevant than the shadow of the future for understanding the adaptation of the fertility decision-making process in a situation of increasing uncertainty” (Guetto et al., 2022:29).

COVID-19 has clearly had a significant impact on childbearing decisions, both directly and indirectly, mediated e.g. by the subsequent economic recession, mass unemployment, difficulties in establishing work-life balance—but the question remains whether the sense of uncertainty associated with it will persist in the future. According to 2023 Eurobarometer data, the proportion of people who considered the spread of infectious diseases to be the world's most pressing problem declined significantly in most European countries, including Hungary (where it dropped to 7%) following the pandemic's subsidence (European Commission, 2023).

### ***Other macro-level stressors and their connections to reproductive decision-making***

My thesis only briefly addresses other macro-level concerns that can similarly generate uncertainty and, in turn, influence long-term decision-making. There is a growing body of literature on how uncertainty related to macro-level factors beyond individual-level determinants shape reproductive attitudes, intentions, and actual fertility (Billari et al., 2006; Comolli, 2023; Hollos & Bernardi, 2009; Malicka et al., 2021). Evidence of how uncertainty—arising from sources beyond those previously discussed—affects fertility preferences can be observed in declining birth rates during periods of economic crises (Billari et al., 2006; Goldstein et al., 2013; Sobotka et al., 2011), or times of war (Golovina et al., 2025; Perelli-Harris & Hilevych, 2023). Sometimes, it is difficult to separate the macro-level sources of uncertainty: As shown in Chapter 4, our interviewees tended to link the uncertainty caused by the COVID-19 pandemic and

climate change with uncertainty related to the outbreak of the Russia-Ukraine conflict in 2022, blending these global stressors together. Their effects are not always separable from each other. Respondents of Bodin et al. (2019) blurred the boundaries between climate change, overpopulation, wars, and a bleak future as reasons for not bringing children into the world.

In addition to uncertainty, there are other macro-level factors that can influence fertility through different mechanisms. One such factor is overpopulation, which is also discussed in Chapter 4. Concerns about overpopulation are often linked to ecological footprints. Overpopulation can evoke fear and anxiety in people, as they may feel that having children contributes to this issue and to overconsumption (Helm et al., 2021). In Krähenbühl's study (2022), participants distinguished between concerns regarding the direct (overpopulation) and indirect (overconsumption) environmental impacts of having children, with the latter being linked to their rejection of capitalist society and its materialist values. There are also examples of voluntarily childless individuals citing overpopulation as a key reason for their decision (Allen & Wiles, 2013). Sometimes, not just participants but researchers also merge overpopulation with climate change, not distinguishing between the two (e.g., both are combined under the term 'environmental concern' as seen in Berrington et al., 2024; and the conceptual distinction is neither clear in Davis et al., 2019). Worries about overpopulation were not as common as concerns about climate change or about the future of the next generation in a Swedish study, and these worries predicted lower ideal and actual number of children (Jylhä et al., 2025).

In the subsequent empirical chapters (Chapter 3–5) of my thesis, I will explore the findings of previous research and my own results more in detail, discussing how people connect climate change concerns with their thoughts and attitudes toward having or not having children.

### **2.3. Pronatalist context**

Hungary provides a relevant case for examining the relationship between environmental concerns and reproductive attitudes due to its pronatalist policy framework and strong traditional norms around family formation. As the articles included in my thesis comprehensively address the Hungarian and broader Central and Eastern European context, I provide here a brief overview of Hungary's pronatalist landscape. In Hungary, parenthood is widely regarded as a natural and desirable life course stage, and the belief that "a woman must have children to feel fulfilled" is internalised by many women

(Szalma, 2014). As in other pronatalist contexts (Krähenbühl, 2022), women, in particular, face pronounced societal expectations regarding motherhood (Szalma, 2021), with public discourse frequently framing childbearing as a moral duty towards the nation. Szalma and Takács (2025) introduced the concept of ‘selective patriotic pronatalism’ to describe a context where there is a preference for the reproduction of certain social groups over others, framed as a national or patriotic duty (Szalma & Takács, 2025).

Declining fertility rates and below-replacement fertility are key demographic challenges of European countries (Sobotka, 2005). Thus, many countries implement policies to reduce childcare burdens, such as long paid parental leave, subsidised childcare, and flexible work hours (Doepke & Kindermann, 2019). Analysing the effect of Hungarian family policy measures between 2000–2015, Szabó-Morvai et al. (2019) found that family policies which seem to successfully encourage fertility are those targeting areas of employment, subsistence and housing prospects (e.g. availability of flexible work opportunities, nursery school coverage, family tax-credit, and home-ownership support (Szabó-Morvai et al., 2019). The post-2010 Orbán governments have explicitly aimed to achieve replacement-level fertility and has therefore pursued a strongly pronatalist approach to family policy (Szalma & Sipos, 2024). The government, in place since 2010, has introduced relatively extensive financial incentives as compared to other European countries, like baby-expecting loans<sup>5</sup> and tax exemptions for mothers of four or more children. In 2025, the Orbán-government is further expanding its pronatalist policies, gradually introducing lifetime income tax exemption also for mothers with three and, later, two children<sup>6</sup>.

These policies, while could be effective in increasing fertility under certain conditions (Brini 2020), e.g. if they also support maternal employment and long-term childcare, also reflect selective pronatalism, favouring specific social groups while marginalising others: low-income, unmarried, or minority-background families (Hašková

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<sup>5</sup> *Babaváró hitel*, introduced in 2019 for married couples; a childbirth incentive loan of 10 million HUF (appr. 25000 EUR as of 15th March, 2025). The debt is interest-free if the expected child arrives within 5 years, and it is reduced after the birth of the second child by 30%, and the total debt is cleared after the birth of the third child. In 2025, the amount of the available loan increased to 11 million HUF, and the upper age limit for the female member of a married couple applying for a loan increased to 35 years, after being reduced from 41 to 30 years in 2024. Source: Palkó I., 10th January, 2025. “Babaváró hitel 2025: feltételek, igénylés, visszafizetés, tudnivalók és változások egy helyen!”. Portfolio.hu. <https://www.portfolio.hu/bank/20250110/babavaro-hitel-2025-feltetelek-igenyles-visszafizetes-tudnivalok-es-valtozasok-egy-helyen-733689>, last accessed: 29.08.2025

<sup>6</sup> Portfolio, 25th February, 2025. „Kiderült, mennyibe kerül az anyák szja-mentessége”. Portfolio.hu. <https://www.portfolio.hu/gazdasag/20250225/kiderult-mennyibe-kerul-az-anyak-szja-mentessege-743683>, last accessed: 29.08.2025

& Dudová 2020; Herke, 2025; Takács, 2018). However, despite these efforts, Hungary's fertility rate remains well below replacement level, the rise in total fertility rate (from 1.25 to 1.52) is largely attributed to demographic shifts rather than policy effects (Szalma & Sipos, 2024), indicating that generous policies alone have not been sufficient to drive a significant increase in birth rates. Hungarian pronatalism seems to be not only a demographic strategy but also a broader ideological and political project that promotes childbearing as essential to societal well-being (Szalma & Sipos, 2024). The government linked population decline to a weakening of traditional family values and aimed to increase fertility not only by expanding benefits for large families but also by promoting heterosexual, married-couple families, and distinguishing between 'traditional' married-couple families and other families, as well as between low-income and better-off families (Herke, 2025). The Hungarian benefit system targets only those "whose reproduction is worthy of encouragement" (Takács, 2018:78).

The gap between policy aims and demographic reality raises questions about the underlying social and cultural attitudes towards childbearing and encourages further research into what other factors play a role in shaping these attitudes.

### 3. Climate Change Concerns and the Ideal Number of Children: A Comparative Analysis of the V4 Countries<sup>7</sup>

#### 3.1. Introduction

The hazards of climate change are being felt around the world, albeit with a high level of heterogeneity across different countries and regions. Environmental sensitivity and risk perception are higher where the effects of climate change are more visible due to individuals' personal, direct experience (Diakakis et al., 2021). Environmental catastrophes are increasingly depicted in mainstream media, and many people are developing anxiety about the climate (Clayton, 2020), even without being directly exposed to negative environmental effects. The phrases “climate anxiety” and “eco-anxiety” have been integrated into the general vocabulary. People may also react to climate change by changing their attitudes and adopting responsible behaviours if environmental sensitivity is widespread (De Rose & Testa, 2015b).

This article focuses on the Visegrád countries (Czech Republic, Hungary, Poland, and Slovakia). It deals with the following question: Do those who consider climate change to be the most serious threat the world is facing regard having fewer children to be theoretically ideal for families and themselves personally? While the literature is rich in studies about childbearing intentions and voluntary childlessness in general, as well as macro-level factors behind fertility choices such as the effects of economic conditions and changes (e.g., Goldstein et al., 2013; Sobotka et al., 2011), scholarship is lacking about the relationship between concerns about climate change and fertility intentions (Schneider-Mayerson & Leong, 2020), especially in a European context. One way of demonstrating concern about the process of climate change is remaining childless or having fewer children: Studies have sparked debate about the idea that one can do most for the planet in terms of environmental considerations by foregoing having a child (Murtaugh & Schlax, 2009; Wynes & Nicholas, 2017). Such attitudes already exist in

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<sup>7</sup> This chapter is based on the article “Climate change concerns and the ideal number of children: A comparative analysis of the V4 countries” that has been published in *Social Inclusion*, 10(3), 206–216. DOI: <https://doi.org/10.17645/si.v10i3.5228>.

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some parts of the world—for instance, polls recently implemented in North America have identified individuals who are factoring climate change concerns into their fertility plans (e.g., Miller, 2018; Morning Consult, 2020). Besides choosing non-parenthood to limit environmental impact, a more common consideration is that the well-being of potential children will be threatened by poor environmental quality (Arnocky et al., 2012; Helm et al., 2021; Schneider-Mayerson & Leong, 2020).

Central and Eastern European countries, including the V4, faced a sharp decline in fertility rates during and after the 1990s. Consequently, governments started to formulate and expand family policies to reduce the unfavourable effects of the decline. Demographic concerns were related to a potential lack of human and financial resources, including the cost of an ageing population (Frejka & Gietel-Basten, 2016). The fertility decline was partly due to the uncertainty caused by the economic and social transformation which followed the collapse of state socialism (Sobotka et al., 2011), but other forces such as changing conditions in a competitive labour market, wider access to modern contraceptives (Frejka & Gietel-Basten, 2016), and the general European trend to the postponement of family formation (Billari et al., 2006), contributed to the process.

My analysis examines the connection between climate change concerns and the limitation of the ideal number of children to a maximum of one, since studies have pointed out that this behaviour can also be a response to concerns about the carbon footprint of procreation, or about the well-being of the next generation (Schneider-Mayerson & Leong, 2020). Since pronatalist pressure is strong in the V4 countries, and the hazards of climate change are not directly tangible for most people living there, we presume that only a very narrow stratum of society actively factor climate change considerations into their childbearing attitudes. Although the phenomenon is not common yet, in the long term the efficacy of pronatalist measures might depend on the spread of environmentalist norms among young people of childbearing age.

An analysis of 2011 Eurobarometer data (which I also use) was carried out by De Rose and Testa (2015a, 2015b), who examined the effects of climate change-related worries on fertility intentions in the 27 EU member states. It differs from my research in several ways—most importantly, in its dependent variable. Fertility intentions (the intended number of children additional to present ones) were measured by the question “How many more children do you intend to have?” My analysis, however, uses questions preceding those used by De Rose and Testa (2015a, 2015b) and assesses fertility intentions from a more distant viewpoint that involves identifying respondents’ ideal

number of children. Empirical research often mixes the concepts of childbearing *ideals* and *intentions*. Philipov and Bernardi (2011) draw attention to the Miller-Pasta theory, according to which childbearing desires that do not necessarily relate to action form expectations that lead to intentions, and thus involve what may be called commitments. The concept of ideals is closer to that of desires when defined in relation to one's ideal circumstances in life (i.e., it assumes that any obstacles to childbearing are neglected). Furthermore, I differentiate between individuals' personal ideals concerning family size and their positions about ideal family size for individuals generally. I create a dichotomous variable that collapses the categories of the ideal number of children to measure attitudes toward a smaller family size (zero or one child) in contrast to a larger one (at least two children). In similar surveys, variance in personal ideals has been found to be larger than in general ideals (i.e., a family's ideal number of children, generally speaking), and the latter seems to be stable across time, although slightly declining (Philipov & Bernardi, 2011).

The reason for using a dataset from 2011 is mainly practical. To my knowledge, no other more recent cross-country surveys cover both topics of interest, i.e., climate change-related issues and family planning at the same time. Using combined data from separate surveys (data on fertility intentions/attitudes and attitudes toward climate change) would have been an alternative but then I would not have been able to analyse my research question at the individual level. Hoping that suitable databases will be available in the future, I carried out my analysis on the latest data that was available, thereby providing insight into a phenomenon that has received even more attention since the release of the data under analysis here. Since the data I use are from 2011, I present the specific social context and trends from that time in the following section.

## **3.2. Background**

### **3.2.1. Fertility Trends**

After the regime change, there was a decline in both first and higher-order births in most post-socialist countries. However, the data highlight the prominence of a two-child family norm, as at least half (but usually 60–85%) of the mothers of one child had a second child in nineteen post-socialist countries (Billingsley & Duntava, 2017). The difference between the pre-transition and post-transition periods is greatest in terms of third births. However, the smallest decline in births occurred, among other areas, in Poland and Hungary, while even more women had a third birth in the Czech Republic

after the transition than before it. But the main drivers of post-transition fertility decline are the falling second-birth rates in Central and Eastern Europe (Zeman et al., 2018). Besides the fertility decline, demographic trends show the postponement of family formation in Europe (Billari et al., 2006). Nevertheless, in non-Soviet countries, age at first birth began to increase earlier than in post-Soviet countries. The process of decline in second and higher-order births is distinct from the process of postponement in post-socialist countries: A shift in the timing of parenthood did not always lead to a reduction in family size (Billingsley & Duntava, 2017). One explanation for these trends is that the economies and societies of these countries went through a great transformation after 1990. Economic uncertainty escalated, youth were faced with entering a new, global labour market associated with increased risk, and the number of those returning to higher education increased, raising the opportunity cost of childbearing (Brainerd, 2014; Róbert & Bukodi, 2005).

### **3.2.2. Family Policies, Childcare Services, and Maternal Employment Rates**

The V4 countries are often labelled “familialistic” for their family policies, which refers to the preference for providing childcare at home, usually by the mother. Since women are supported to leave the labour market and care for children at home, they are often perceived through their role as carers (Michoń, 2015).

Policies about leave vary in flexibility and length, in their relation to earnings, and whether well-paid. In comparison to other OECD countries, in terms of total weeks of paid leave granted to mothers, including maternity leave (which is available only to mothers before and after giving birth) and parental leave, the V4 countries led the way with between 110–164 weeks (Thévenon & Solaz, 2013). These extended terms of leave have contributed to making mothers the primary caregivers for children below the age of three in all four countries (Szikra & Győry, 2014). Statutory paternity leave, which allows fathers to spend time at home after the birth of a child, was extremely short at the time of the survey: one week in Hungary and Poland (Moss, 2011), and not a statutory entitlement in Slovakia and the Czech Republic. Poland stands out due to the generosity of its leave policy, and this country undertook the most impressive reforms in terms of length and flexibility of leaves, starting in 2007 (Michoń, 2015).

Childcare services are underdeveloped in the V4 countries—the state does not support “defamilialisation”; it rather discourages it, supporting the traditional family model instead (Michoń, 2015). Attendance levels associated with formal childcare arrangements were generally low in these countries in 2011 compared to other EU

member states, especially among children under three years old. Attendance was between 3–5% in the Czech Republic, Poland, and Slovakia, and 8% in Hungary in contrast to the 29% EU average attendance rate in this age group. No V4 country reached the EU average (83%) for use of childcare services for children between the age of three and compulsory school age, with 74–75% in the Czech Republic, Hungary, and Slovakia, and an extremely low rate of 43% in Poland.

Female labour force participation also conformed to the traditional picture suggested by leave and childcare policies. While the employment rate of mothers with a child between 3–5 years old (62–80%, lowest in Hungary) was around the OECD average (66%) in 2011, the proportion of employed mothers with a child under three years (6–21%, also lowest in Hungary) was well below average (52%), except in Poland (54%). Polish women are encouraged to become mothers only after they find a job, as well as to return to work after giving birth before having another child due to the incompatibility between family and work, unstable contracts, and the fear of unemployment (Matysiak, 2009).

In these countries, where social attitudes toward gender roles are often conservative and quality part-time employment opportunities are scarce, but also for economic reasons, women often have to choose between employment (having a full-time job) or family (withdrawing from the labour market; Michoń, 2015). This is a good example of how family policies that were introduced or expanded to mitigate the fertility decline are not always effective in shaping fertility behaviour, and their impact is mediated through socioeconomic and other structural conditions of countries and features of the policies (Neyer & Andersson, 2008).

### **3.2.3. Climate Change, Environmental Attitudes, and Related Policies**

Nowadays, we see two contrasting processes related to the world population. Globally, our planet is overpopulated, whereas in many parts of the world nations are facing the challenge of an ageing society. For the former, childlessness or lower fertility rates could be an answer; however, this approach may contribute to increasing the problem of the latter because the shrinking working-age group would not reproduce itself. Of the 30 countries with the highest old-age dependency ratio, which is calculated by dividing the 65+-aged population by the working-age (15–64) population, 26 countries are from Europe. The Czech Republic ranked nineteenth on the list with a ratio of 31%, Hungary ranked twenty-first, Poland twenty-ninth, and Slovakia forty-first (with 25%; see The World Bank, 2020). Countries where population growth is low or negative often

have high income and consumption levels, while poorer high-fertility nations often have low or even negligible consumption. The greenhouse gas emissions that contribute to the change in the climate are associated with these high levels of consumption. However, it is not simply the population size that drives the process of climate change—it is interconnected with consumer behaviour and the emission levels linked to that. The impacts of climate change, however, are and will be greatest on people from developing countries and poorer regions (Stephenson et al., 2010).

Perceptions of climate change have been changing constantly over the past decades. In the early 2000s, although it was acknowledged as a danger, it was only a secondary consideration compared to other environmental risks in the EU and the USA (Lorenzoni & Pidgeon, 2006). In 2011, climate change was seen as the second most serious problem in the EU (indicated as most serious by 20% of citizens), following poverty, hunger, and a lack of drinking water. The proportions of citizens of V4 countries who felt this way remained at or below this average, with Hungary having the smallest share of citizens who felt that climate change was the most important environmental risk (14%). Being a woman, younger, and better educated increased climate change concerns. Tackling climate change was mostly perceived to be the responsibility of either national governments, the EU, or business and industry. Twenty-one percent of EU citizens regarded themselves as having personal responsibility, with Slovakia (25%) and the Czech Republic (19%) leading the way in this respect among the V4, and Poland and Hungary falling behind (11% and 7%, respectively). While 53% of EU citizens and Hungarians reported that they had taken some action to fight climate change recently, this share was 45–47% in the Czech Republic and Slovakia, and 30% in Poland (European Commission, 2011).

Climate change has implications for social policies. Meadowcroft (Gough et al., 2008) argues that closer connections need to be established between social and climate policy to prevent further changes in the climate. Today's welfare state is unsustainable in the sense that it is built on continuous economic development. Literature stresses that population-size-related issues should be linked to environmental considerations and the well-being of humans and nature in the future (Gough et al., 2008). Nevertheless, although reducing population growth could considerably contribute to bringing down CO<sub>2</sub> emissions globally, it is questionable that policies that reduce fertility would be appropriate in countries with already low rates, taking the dilemmas about the ageing population into account (O'Neill et al., 2010).

A study that used data for 2016–2017 (Otto & Gugushvili, 2020) measured support for climate change policies and public welfare provision, identifying four distinct attitude groups. The Czech Republic was one of the most divided European countries in terms of eco-social priorities, meaning that an almost equal share of people belonged to each attitudinal group. In Hungary and Poland, a fairly large share of people (above 30%) were “eco-social sceptics,” disliking both public welfare and environmental policies, but the second major group had different opinions: While 31% of Hungarians were suspicious of the welfare state but in favour of policies for mitigating climate change, 32% of Poles supported public welfare programmes but rejected climate change policies.

It is a question of whether members of society will accept the trade-off of environmental protection over economic growth. It was true of most EU member states according to 2006 Eurobarometer data, but not in three countries of my analysis (Hungary, Poland, and Slovakia). The Czech Republic, conversely, had the fourth highest approval rating for environmental protection among the EU member states (with around two-thirds of citizens agreeing that economic growth should be restricted in favour of environmental protection; see Gough et al., 2008).

### **3.3. Method**

#### **3.3.1. Sample**

Datasets that include recent information about both climate change issues and family planning are scarce: the empirical basis of my analysis is wave 75.4 of the Eurobarometer from 2011 as it covers both topics (“social climate and family planning” and “climate change”). The European Commission’s Eurobarometer surveys are carried out in EU member states twice a year, are always based on new samples, and involve interviewing approximately 1,000 respondents per country face-to-face at their homes. Participants are selected through a multi-stage, random (probability) sampling design that represents the population aged 15 or older (Eurobarometer Data Service, n.d.).

The present study is based on data from the V4 countries. The database is weighted using the post-stratification weight (given by the data publisher). The full Eurobarometer sample for the four countries included 4,023 observations, of which 2,037 were associated with individuals of the age group of my interest (people of reproductive age, aged 18–45; see Table 1 for a detailed description of variables).

**Table 1. Description of dependent and independent variables by country**

Variable	Czech Republic		Hungary		Poland		Slovakia	
	%	N	%	N	%	N	%	N
Gender								
male	50.9	259	49.5	244	49.8	240	52.0	287
female	49.1	250	50.5	249	50.2	242	48.0	265
Age group <sup>1</sup>								
18–24	22.4	114	20.9	103	26.1	126	28.6	158
25–29	16.5	84	12.8	63	19.9	96	16.3	90
30–34	19.8	101	18.0	89	18.5	89	17.0	94
35–39	19.8	101	24.5	121	19.3	93	18.5	102
40–45	21.4	109	23.9	118	16.2	78	19.6	108
Highest level of education								
low	9.2	47	52.3	258	11.4	55	4.4	24
medium	77.4	394	33.7	166	66.9	323	76.4	421
high	13.4	68	14.0	69	21.7	105	19.2	106
Type of settlement								
rural area or village	35.2	179	35.0	173	38.9	188	44.6	246
small/middle town	40.5	206	30.0	148	34.2	165	40.6	224
large town	24.4	124	35.0	173	26.9	130	14.9	82
Difficulty paying bills								
most of the time	11.9	59	16.0	78	6.9	32	4.5	24
from time to time	39.9	198	46.7	227	26.7	124	33.1	175
almost never/never	48.2	239	37.2	181	66.5	309	62.3	329
Has at least one child								
yes	56.9	289	63.1	310	52.7	251	54.8	298
no	43.1	219	36.9	181	47.3	225	45.2	246
Considers climate change to be the single most serious problem the world is facing								
yes	16.4	82	15.2	75	21.3	100	20.7	114
no	83.6	418	84.8	417	78.7	369	79.3	436
Mentioned themselves as responsible for tackling climate change								
yes	21.8	107	8.2	39	12.0	53	25.9	140
no	78.2	383	91.8	435	88.0	387	74.1	401
Has taken action to fight climate change over the past six months								
yes	52.0	251	59.0	269	34.4	158	50.8	265
no	48.0	232	41.0	187	65.6	301	49.2	257
Ideal number of children in general								
maximum 1	21.1	95	16.6	79	13.1	54	18.5	93
2 or more	78.9	356	83.4	398	86.9	357	81.5	411
Ideal number of children personally								
maximum 1	21.1	99	17.6	82	16.9	69	21.8	110
2 or more	78.9	371	82.4	384	83.1	340	78.2	395

Notes: Data are weighted by post-stratification weight; <sup>1</sup> age is included as a continuous variable in the regression models.

### 3.3.2. Measures

The dependent variable, ideal family size, was measured by dichotomous variables regarding the ideal number of children generally and personally. The original variable was dichotomized to capture both stronger and weaker attitudes towards a smaller family size. The related questions were “Generally speaking, what do you think is the ideal number of children for a family?” and “For you personally, what would be the ideal number of children you would like to have or would have liked to have had?” Those who thought zero or one child would be ideal for a family/themselves were coded 1. A minority of respondents would prefer families to remain childfree. Note that some parents may have shared this opinion and belonged to this group since this question was asked from the whole sample. Besides the very low number of answers indicating zero children as ideal, there is another reason for collapsing the categories and including those who think one child would be ideal for a family/themselves: This lets me test the assumption that climate change-related concerns may contribute to the belief that fewer children are ideal for a family. I believe that downward deviation from the ideal family size of two children, which is generally considered ideal for the majority of the sample, may signal a way of thinking that is typical of those who would entirely give up parenting due to worries about climate change, only a little less radically.

As for climate change-related concerns, I used the question: “Which of the following do you consider to be the single most serious problem facing the world as a whole?” The main explanatory variable distinguishes those who consider climate change to be the single most serious global problem (coded 1) from those who marked something else (e.g., the economic situation, the spread of infectious diseases, etc.) as the most serious problem (0). For the main explanatory variable I intended to use a comprehensive indicator that could be broadly interpreted since studies point out that reasons for the mental-health impacts of climate change vary on a wide scale, including anxiety related to an uncertain future or concern about potential harm to one’s future offspring (Clayton, 2020). The analysis of De Rose and Testa (2015a, 2015b) on the relationship between climate change concerns and fertility intentions applied the same explanatory variable.

For control variables I included *gender*, *age*, *squared age* (respondent’s age squared was included to check whether the relationship between age and the odds of regarding having fewer children as ideal is linear or U-shaped), *highest level of education* (includes three categories: “low” education means primary education, first- or second-stage basic education, or lower secondary education; “medium” means upper secondary

and post-secondary, non-tertiary education; “high” means tertiary education), *type of settlement* (rural area or village, small/middle town, and large town), *subjective financial situation of respondents* (since income data was not available, I used a variable that contains information about whether the respondent had difficulty paying bills the year before, to which replies were: most of the time, from time to time, and almost never/never), and *whether the respondent has a child* (no distinction was made between biological and adopted children in the questionnaire). Additionally, two climate change-related variables were included in the models: whether respondents indicated that they were *personally responsible* in response to the multiple-choice question “In your opinion, who within the EU is responsible for tackling climate change?”; and whether the respondent said yes to the question “Have you personally taken any action to fight climate change over the past six months?” The reason for controlling for these climate change-related variables is that I assumed they might be correlated with the main explanatory variable, and might have a separate, perhaps contrasting effect on ideal family size (if someone is actively taking action against climate change, it is possible that this will make them feel that they are working for a better future and thus creating the conditions to have children without concerns). By involving individuals’ own responsibility for tackling climate change, it becomes easier to distinguish between the mechanisms presumed to connect climate change concerns and reduced ideal family size: If a person believes that having fewer or no children is an ideal means of reducing environmental problems, this variable is believed to capture this effect and distinguish it from another potential driver (smaller ideal family size because of concerns about the well-being of one’s own child).

### **3.3.3. Analytical Strategy**

Following the descriptive analysis, bivariate relationships between the dependent and independent variables were examined through cross-tabulation analysis separately by country.

Logistic regression analysis was then conducted separately by country on the subset of valid responses to the respective dependent variable, thus the analytical sample might be selective. Non-response rates to the questions about the ideal number of children in general and personally for the respondents were the following, respectively: Hungary—3.3%, 5.3%; Slovakia—8.6%, 8.6%; Czech Republic—11.4%, 7.8%; Poland—14.8%, 15.2%.

For each country the two dependent variables (ideal number of children in general and personally) were analysed in separate, nested regression models: Model 1 included

only the main explanatory variable, while Model 2 also included all control variables. The advantage of using logistic regression analysis to examine the relationship between the explanatory variables and the two-category dependent variables is that the results are easily interpretable: If the coefficient is negative, this means the odds of regarding a maximum of one child as ideal are lower, while a positive coefficient means higher odds of preferring a smaller ideal family size.

### **3.4. Results**

The ideal number of children is two or more for the majority of respondents in all V4 countries, both generally speaking and for them personally. However, according to the descriptive results presented in Table 1, the four countries differ considerably regarding the exact share of respondents who think a maximum of one child is the ideal number. Among those who provided a valid answer to the question (excluding those who answered “there is no ideal number” or “it depends,” etc.), this proportion varied from 13.1% of Poles to 21.1% of Czechs in terms of the ideal number of children for a family, speaking generally. On a personal basis, those who think zero or one would be the ideal number of children they would like to have (or would have liked to have had) represented 16.9% of respondents in Poland, 17.6% in Hungary, and more than one-fifth of respondents in the Czech Republic (21.1%) and Slovakia (21.8%).

Continuing with the bivariate relationships, regarding general views about the ideal number of children, Slovakia is the only country where there is a significant difference ( $p = 0.005$ ) according to the main explanatory variable: Among those who consider climate change to be the single most serious problem, we find a smaller proportion of those who regard a maximum of one child to be ideal (8.7%) compared to those who consider something else to be the most serious problem (20.6%). A similar but smaller difference ( $p = 0.045$ ) exists regarding personal ideals about the number of children for Slovaks whose main concern is climate change (14.5%) or something else (23.4%), while there is an even smaller but considerable ( $p = 0.071$ ) difference among Poles (10.3% vs. 18.5%) in the proportion of those who believe that a maximum of one child is personally ideal.

Overall, there were some differences in general views about ideal family size according to the demographic and climate change-related control variables, mostly in Czech Republic and Slovakia: A smaller proportion regarded a maximum of one child to be ideal in general among those who had taken action to fight climate change lately,

among women, and among parents (in Slovakia), while a larger proportion of those living in a large town and those having difficulties paying the bills most of the time (in Slovakia and the Czech Republic) regarded a smaller family size to be ideal. In terms of personal ideals, the odds of regarding a smaller family as ideal were higher among men and those living in a large town (Czech Republic, Slovakia), those having difficulties paying bills most of the time, and those who were moderately well educated compared to the higher educated (Slovakia), as well as among childless persons (all countries). The odds were lower among those who indicated themselves as responsible for tackling climate change (in Hungary and Slovakia) and who had taken action to fight climate change recently (Slovakia). In Hungary, both in terms of general and personal views, individuals aged 25–29 and 40–45 had a greater likelihood of regarding a maximum of one child as ideal than those in other age groups.

Table 2 shows the coefficients of the logistic regression analysis only for the main explanatory variable, climate change-related concern. The full set of coefficients is presented in the Appendix (*Tables 9–16*). Contradictory results are obtained in the four countries: there is a positive association between climate change concerns and regarding a maximum of one child as ideal both generally speaking and personally in the Czech Republic and Hungary (except for the uncontrolled estimate in Model 1a for the Czech Republic), while a negative association is found in all models for Poland and Slovakia. In terms of general views, the coefficients are significant only for Hungary and for Slovakia, at different levels ( $p < 0.1$ – $0.01$ ). For personal ideals, results are significant for Slovakia in both models ( $p < 0.05$ ), for Poland in Model 1b ( $p < 0.1$ ), and for Czech Republic in Model 2b ( $p < 0.1$ ).

**Table 2. Connection between climate change-related concerns and the ideal number of children in general and personally in the V4 countries**

	Czech Republic	Hungary	Poland	Slovakia
<b>Dependent: ideal no. of children in general</b>				
Considers climate change to be the single most serious problem the world is facing (Model 1a)	-0.069 (0.313)	0.598# (0.308)	-0.205 (0.369)	-0.970** (0.365)
(Model 2a)	0.148 (0.331)	0.886** (0.335)	-0.180 (0.418)	-1.124** (0.419)
<b>Dependent: ideal no. of children personally</b>				
Considers climate change to be the single most serious problem the world is facing (Model 1b)	0.390 (0.291)	0.323 (0.316)	-0.627# (0.374)	-0.579* (0.294)
(Model 2b)	0.520# (0.314)	0.447 (0.350)	-0.703 (0.436)	-0.748* (0.345)

Notes: Model 1 includes only the main explanatory variable; model 2 includes all control variables; for the full set of constant values and coefficients see Appendix (Tables 9–16); estimates obtained from separate logistic regression models (unstandardized coefficients and standard errors in parentheses); #p < 0.1; \*p < 0.05; \*\*p < 0.01; \*\*\*p < 0.001.

Regarding the climate change-related control variables, attitudes towards one's own responsibility for tackling climate change seemed to matter only in relation to personal views in Hungary (p = 0.029) and Slovakia (p = 0.008): Those who considered it their own responsibility were less likely to regard zero or one child as ideal. Results from the analysis of bivariate relationships regarding basic demographic variables were roughly reproduced in the multivariate analysis, with a few exceptions, as detailed below. In terms of general attitudes towards the ideal number of children, in Hungary, the positive coefficient of living in a large town became significant (p = 0.019), while a negative relationship was discovered between having children and regarding a maximum of one child as ideal (p = 0.086). Regarding personal views, gender was no longer a predictor of ideal family size for the Czech Republic (p = 0.207); nevertheless, in Hungary, men were less likely to regard a maximum of one child as ideal than women (p = 0.085). Age had a positive effect in Poland (p = 0.091), and the negative coefficient of people living well financially on smaller ideal family size (p = 0.05) became significant in Hungary. Otherwise, the associations seen in the bivariate analysis were sustained in the multivariate one.

### 3.5. Conclusion

Sociological research often neglects environmental considerations as potential predictors of childbearing attitudes. In this study, I examined whether concerns about climate change are in relation to ideal family size. In the Czech Republic and Slovakia, more than 21% of the respondents regard a small family size, i.e., of zero or one child as ideal in terms of personal attitudes, and this rate is slightly lower in Hungary (17.6%) and in Poland (16.9%). Among individuals who belong to the cohorts born prior to my sample (between 1940–1970), in Central and Eastern Europe, there was a decline in total fertility driven by falling second-order births. On the contrary, first-birth rates were relatively high and negative attitudes towards childlessness were dominant in comparison with other low-fertility countries. According to Zeman et al. (2018), factors such as the uncertainties related to the economic transition after 1990, relatively low wages and living standards, and the traditional gender roles in the family collectively contributed to the rise of one-child families. The individuals of my analysis (belonging to cohorts born between 1966–1993) entered the conventional age of first childbirth around or after the regime change, thus only part of these factors should play a role in forming their ideals and attitudes regarding childbearing. I assumed that other reasons, such as climate change worries as new forms of uncertainties might contribute to the high share of those with a smaller ideal family size in my analytical sample.

This analysis points out that there may be a relationship between climate change-related concerns and ideal family size, although it is not uniform. Within countries, no inconsistencies were found in terms of the direction of effect between general and personal views about the ideal number of children when the difference was significant, although the magnitude of the discrepancy varied. Climate change-related concerns appeared to be positively associated with a smaller ideal family size in Hungary, but only when generally speaking. Regarding personal ideals about family size, a positive relationship was identified for the Czech Republic. Contrary to expectations, in Slovakia, a strong negative association was observed between climate change concerns and smaller ideal family size (in general as well as personally), which means that those who regard climate change as the most serious threat were more likely to consider a larger family size with at least two children to be ideal.

These contradictory findings have several potential explanations. Given that climate change was considered a serious threat by relatively few people in the Visegrád

countries, the weak effects are not surprising. Although the data are not suitable for revealing causal relationships, the assumed direction of the association runs from concerns about climate change to childbearing attitudes. However, following De Rose and Testa (2015a, 2015b), the negative coefficients in the case of Slovakia and Poland could be interpreted in the opposite way: Climate change-related concerns may play a role for people thinking of having a bigger family because they are more concerned with the future of the next generation. Nevertheless, research has revealed that larger family size is one of the determinants of weaker climate change-related concerns, probably due to an (unmeasured) traditional family orientation (Price & Bohon, 2019). Although my study is concerned with ideal family size, research that investigates actual family size might be illuminating, even despite that the ideal number of children is reported to be higher in Europe than actual fertility (Liefbroer et al., 2015). In the case of the present research, this would suggest that the explanation must be sought in traditional family orientations and conservatism. In Hungary, when individuals are asked about societal ideals, environmental concerns seem to matter, but at the level of personal desires for children, a stronger traditional orientation might suppress the relationship between environmentalism and childbearing attitudes.

This, however, does not explain the between-country variance. The four countries are often treated as one unit in international comparative research, but these controversial results suggest that a more detailed, in-depth examination of country-level discrepancies is necessary, since besides plenty of similarities there were non-negligible differences in family and childcare policies (Czech Republic and Slovakia had similarities in their leave policies, while Poland stood out in terms of the availability and attendance of formal childcare services and maternal employment rates; see Michoń, 2015) and in climate change-related attitudes (again, the Czech Republic and Slovakia shared most similarities regarding the indicators). Neyer and Andersson (2008) also argue that the context (not only the local but also temporal) cannot be neglected when the effects of family policies are evaluated, since the policies do not have a universal impact. Even where pronatalist expectations in fertility trends might seem to be met, other contextual factors play important roles regarding individual fertility behaviour. Individual-level factors and features of the sample of this analysis might also be behind the dissimilar results: Slovak data is unique in that men and younger people dropped out from the analytical sample in larger proportions due to their non-responses. If this factor plays a role, the results would

indicate that gender and age may mediate the relationship between climate change-related concerns and ideal family size.

This study has drawn a picture of the situation ten years ago, when climate change was less of an everyday topic than it is today. The article has its limitations: Perhaps the major shortcoming is that, due to the low case numbers in some categories, a dichotomous variable was used to measure the ideal number of children instead of taking all the different values into account. Moreover, the database did not allow me to control for religiousness or political ideology, although these factors have been shown to affect environmental considerations (Otto & Gugushvili, 2020; Price & Bohon, 2019), and might also affect childbearing ideals. Finally, a more recent database which covers the analysed topics would be greatly needed to address this question in a more up-to-date manner. Nevertheless, I believe that the research draws attention to the fact that, in addition to the well-researched determinants, other considerations such as environmental attitudes might influence childbearing attitudes or desires. Additionally, my study demonstrated the problems of treating the V4 countries as belonging to one unit despite the apparent differences in attitudes toward environmental issues as well as toward ideal family size. These findings have potentially important policy implications. To increase support for policies aimed at tackling climate change in pronatalist countries, a shift in the narrative would be necessary so that environmental protection appears as a traditional norm in discourse (Price & Bohon, 2019). The question of whether pronatalist family policy and green policy are at all compatible may sound harsh, but it is definitely an issue for further discussion.

### **3.6. Extension: Additional Analyses and Interpretation of Results**

To address opponents' suggestions and to move beyond stating merely a positive/negative association or the lack of significance, I re-estimated all logistic regression models and now report both odds ratios (ORs) and average marginal effects (AMEs). The ORs express each coefficient in multiplicative form, showing how many times higher (or lower) the odds of favouring a smaller ideal family size are when climate change is regarded as a serious problem. Thus, the magnitude of the association becomes more transparent to readers who may find log-odds less intuitive. AMEs translate the same relationship into percentage-point changes in predicted probability, averaged across all observations. These allow a direct comparison of the strength of the effect of the main independent variable across countries, as AMEs are not, or only marginally, affected by unobserved heterogeneity unrelated to the independent variables in the regression model (Mood, 2010).

In the original article, the regressions in the first models were based on respondents with valid answers on the main explanatory variable and the respective dependent variable. In the re-analyses, I corrected the analytical sample by restricting even the bivariate models to cases with valid responses on all variables included in Model 2. This adjustment does not substantially alter the estimates, although it leads to minor shifts in significance levels and effect sizes in a few cases. For example, in the case of personal ideals, the result for Poland is no longer significant even at the  $p < 0.1$  level, and the Slovak result is significant only at  $p < 0.1$ . However, the Hungarian result for the general ideal family size becomes significant at  $p < 0.05$ . Overall, the findings remain robust, and these minor differences do not affect the interpretation, as the article's conclusions were based on the fully controlled models. Additionally, in the updated analyses, slight shifts in significance levels in Model 2 are due to robust standard errors that were applied to account for potential heteroskedasticity or model misspecification, which are common concerns in survey data.

**Table 3. Connection between perception of climate change as the most serious global problem and the ideal number of children in general and personally (logistic regression coefficients and odds ratios, by country and model)**

Country	Model	Dependent: ideal no. of children in general				Dependent: ideal no. of children personally			
		B	Robust S.E.	p	Exp(B)	B	Robust S.E.	p	Exp(B)
CZ	Model 1	0.031	(0.328)	0.924	1.032	0.439	(0.307)	0.154	1.476
	Cons.	-1.291***	(0.134)	0.000	0.275	-1.359***	(0.135)	0.000	0.257
	Model 2	0.148	(0.346)	0.670	1.159	0.520	(0.320)	0.105	1.681
	Cons.	-0.075	(2.403)	0.975	0.928	-2.755	(2.388)	0.249	0.064
HU	Model 1	0.736*	(0.332)	0.027	2.089	0.321	(0.340)	0.345	1.378
	Cons.	-1.857***	(0.160)	0.000	0.156	-1.573***	(0.148)	0.000	0.207
	Model 2	0.886**	(0.339)	0.009	2.427	0.447	(0.373)	0.230	1.564
	Cons.	-4.362#	(2.356)	0.064	0.013	0.972	(2.413)	0.687	2.643
PL	Model 1	-0.174	(0.467)	0.710	0.841	-0.545	(0.488)	0.264	0.580
	Cons.	-1.874***	(0.200)	0.000	0.154	-1.600***	(0.188)	0.000	0.203
	Model 2	-0.180	(0.467)	0.700	0.836	-0.703	(0.509)	0.167	0.495
	Cons.	-5.323#	(3.210)	0.097	0.005	-6.304#	(3.305)	0.056	0.002
SK	Model 1	-1.078*	(0.458)	0.018	0.340	-0.690#	(0.363)	0.057	0.502
	Cons.	-1.309***	(0.147)	0.000	0.270	-1.140***	(0.137)	0.000	0.320
	Model 2	-1.124*	(0.467)	0.016	0.325	-0.748#	(0.395)	0.058	0.473
	Cons.	-0.359	(2.785)	0.897	0.698	-2.434	(2.774)	0.380	0.088

Notes: Table contains estimates of the main explanatory variable, “Considers climate change to be the single most serious problem the world is facing”, obtained from separate logistic regression models. Model 1 includes only the main explanatory variable; model 2 includes all control variables; further constant values and coefficients are not shown; #p < 0.1; \*p < 0.05; \*\*p < 0.01; \*\*\*p < 0.001.

**Table 4. Average marginal effect (AME) of regarding climate change the most serious problem the world is facing on the ideal number of children in general and personally**

Country	Dependent: ideal no. of children in general			Dependent: ideal no. of children personally		
	AME	Delta-method S.E.	p	AME	Delta-method S.E.	p
CZ	0.024	0.056	0.669	0.083#	0.504	0.099
HU	0.110**	0.415	0.008	0.058	0.049	0.230
PL	-0.020	0.052	0.701	-0.087	0.063	0.166
SK	-0.146*	0.059	0.014	-0.105#	0.055	0.054

Notes: AMEs obtained from separate logistic regression models by country (Model 2 including all control variables presented in the study); #p < 0.1; \*p < 0.05; \*\*p < 0.01; \*\*\*p < 0.001.

Table 3 supplements the analysis by reporting odds ratios (ORs) for the main explanatory variable, and Table 4 presents the corresponding average marginal effects (AMEs). These estimates show that, in Hungary, individuals who consider climate change to be the most serious problem are 2.4 times as likely to prefer smaller family sizes in

general compared to those who do not view climate change the most pressing issue. The AME of 0.11 indicates that climate concern raises the predicted probability of favouring a smaller family by 11 percentage points. By contrast, respondents in Slovakia who see climate change as a very serious issue are only 0.325 times as likely to prefer a smaller family size generally as those with lower climate concern. Here the AME is -0.146, signalling a stronger association in the opposite direction when compared with Hungary. In the other two countries, the ORs remain close to 1 (slightly above in the Czech Republic and slightly below in Poland), yet neither association is statistically significant; their respective AMEs (0.024 and -0.020) suggest very small, negligible effects.

Turning to personal family size ideals, in the case of the Czech sample, the average marginal effect of climate concern reaches statistical significance at the 10% level ( $p = 0.099$ ), even though the corresponding logit coefficient falls just outside the threshold of significance ( $p = 0.105$ ). The estimate shows that climate change concern increases the predicted probability of considering zero or one child as personally ideal by 8.3 percentage points (the odds for this outcome are roughly 1.7 times those of less climate-concerned individuals). For Slovakia, similarly to the pattern in case of general family size ideals, the predicted probability of a smaller personal ideal family size decreases by 10.5 percentage points ( $p < 0.1$ ) among those who see climate change as the most serious problem, their odds are less than half ( $OR = 0.473$ ) of those for individuals who are less worried about climate change. Although the estimates for Hungary and Poland are not negligible in size (HU:  $OR = 1.564$ ,  $AME = 0.058$ ; PL:  $OR = 0.495$ ,  $AME = -0.087$ ), neither association reaches statistical significance.

#### ***Further interpretation of results***

With the aim of deepening the interpretation of my contradictory findings, I try to approach them from broader angles. All four studied countries face demographic ageing and the consequences of the post-socialist transition on reproductive behaviours, and each exhibits some form of pronatalist family policy. Yet the associations between climate change concern and ideal family size differ in direction and strength, raising questions about the assumed role of pronatalism in shaping these relationships. The presence of pronatalist policies, however, does not guarantee their uniform meaning or impact across national contexts, specific characteristics and political framings of pronatalism can vary considerably.

Here I highlight and elaborate on the results from Hungary and Slovakia, as these showed the most reliable and sizeable associations. The contrasting findings in the two

countries may partly stem from differences in how pronatalist policy and family ideals were shaped and institutionalised before 2011, when the data collection took place. While both countries inherited population policy frameworks from the socialist era, their post-transition trajectories were not identical. In Hungary, pronatalism became a dominant national narrative more recently, particularly after 2010 (Szalma & Sipos, 2024). Although Hungary did not have a consistent pronatalist policy before 2010, with no pronatalist policies except for the years between 1998 and 2004, implemented by the first Orbán-government (Holloš & Bernardi, 2009), the country nevertheless stood out in terms of financial commitment to families. In both 2002 and 2010, Hungary allocated a significantly higher percentage of its GDP to families and children, and in 2002, birth grants, maternity and parental-leave benefits and child benefits together amounted to an exceptionally high share of the average salary as compared to the other three countries included in my analysis (Ainsaar & Riisalu, 2014). The benefits available for families were not explicitly embedded in nationalist rhetoric or narratives of demographic decline. Nevertheless, a more family-centred public discourse had already begun to develop.

According to Šprocha (2022), Slovakia's post-socialist approach to family policy involved a withdrawal of state support, a decline in childcare availability, and a shift in responsibility for reproduction to the private sphere. Although some measures were reintroduced or expanded in the late 1990s and early 2000s, this renewed support often lacked coherence and continuity. Pronatalism was less central in national discourse than in Hungary, and family policy instruments were more modest in value and scope. Moreover, restrictions on combining childcare with labour market participation remained in place until the early 2000s, reinforcing a traditional maternal role without offering real flexibility. The penalty for maternity is high, as family policy in Slovakia lacks comprehensive mechanisms to mitigate the negative consequences of parenthood or to prevent the long-term disadvantages women face in the labour market as a result of motherhood (Šprocha, 2022).

Besides differences in the nature of pronatalism, it is also possible that the perception and meaning of climate change itself differ between the countries. Climate change is not a universally understood or experienced phenomenon: risk perception could be dependent on local social, cultural, and political contexts (Weber, 2016). In Hungary, as described earlier in this chapter, concern about climate change tends to be relatively low: a smaller share of the population identifies it as the world's most pressing problem or sees it as their personal responsibility. Within this environment, those few who do rank

it as the most severe issue may hold especially strong views. In Hungary's politically polarised environment, considering climate change an important issue has become associated with the political left, given the right-wing government's continued disregard for the topic. As a result, individuals who attach high importance to climate change may also be more likely to challenge dominant norms e.g. related to views on ideal family size in general. However, these views do not necessarily extend to more personal ideals, as narratives deeply embedded in social expectations often link having children with personal fulfilment (Szalma, 2014). By contrast, in Slovakia, having children may be more commonly seen as a private matter or cultural expectation rather than a civic or patriotic obligation. This may mean that people who are highly concerned about climate change may not feel that an oppositional stance is needed, they can still uphold normative family ideals. In fact, more Slovak respondents were likely to identify climate change as the most serious global problem in 2011, and to see personal responsibility in addressing it as compared to Hungary. A higher proportion also recognised the economic benefits of climate action and improving energy efficiency (European Commission, 2011). It is therefore possible that, in this context, some people see raising environmentally conscious children as part of the solution rather than the problem. If having no or fewer children would be framed as a form of pro-environmental action, then in contexts where there is some confidence in the state's ability to address climate challenges, individuals may feel less personally responsible to change behaviour.

These reflections, of course, leave many questions open. Research that measures pronatalist attitudes and assesses orientations towards climate change in more nuanced ways could shed light on the deeper mechanisms behind these associations.

## 4. Reproductive Choices and Climate Change in a Pronatalist Context – results of an interview study<sup>8</sup>

### 4.1. Introduction

Nowadays, uncertainty in reproductive decision-making is an important research topic. This uncertainty may arise from a range of contributing factors (Ní Bhrolcháin & Beaujouan, 2011; Bernardi et al., 2015; Campisi et al., 2022; Vignoli, Guetto et al., 2020), including, among others, labour market insecurity and financial difficulties (Fahlén & Oláh, 2018), relationship instability (Murinkó & Szalma, 2015), and difficulties in reconciling work and private life (Begall & Mills, 2011). Concerning factors may also stem from the macro-structure of society: events like the regime change in the post-socialist region in 1990 (Szalma & Takács, 2022a) or the economic crisis of 2008 may have influenced reproductive choices through various pathways (Sobotka et al., 2011). Also, the COVID-19 pandemic starting in early 2020 contributed to feelings of uncertainty at the macro level, and it also influenced reproductive choices (Malicka et al., 2021).

At the same time, another macro-uncertainty is also present, and unlike COVID-19, it is less sudden, and lasts over a longer period: the phenomenon of climate change. Climate change has been unfolding over an extended period, with observable effects already impacting our daily lives such as droughts and hot, prolonged summers, its more severe repercussions are unforeseeable. However, one of the most important assumptions in the life course theory is that people try to minimize unpredictability in their lives (Bernardi et al., 2019).

The sense of uncertainty is shaped not only by our past experiences and present circumstances but also by the “shadows of the future” (Bernardi et al., 2019). Thus, it is worth examining how concerns related to climate change affect life-altering decisions such as reproductive choices.

Climate change has been shown to impact mental health, inducing anxiety related to an uncertain future or concerns about potential future harm to one’s children (Clayton, 2020; Pihkala, 2020); and some studies have found evidence of the relationship between environmental concerns and voluntary childlessness in the Anglo-Saxon context

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(Carmichael & Whittaker, 2007; Gillespie, 1999; Hintz & Haywood, 2021). However, the link between reproduction-related choices and climate change has rarely been studied in other contexts, such as in Central and Eastern European (CEE) societies, except for a couple of comparative studies based on survey research (De Rose & Testa, 2015a, 2015b; Szczuka, 2022). It would be interesting to look deeper into the link between reproductive choices and environmental concerns in CEE societies because in this region, governments aim to encourage or even pressure women to have more children by providing financial aid measures, such as generous maternity benefits, paid family leave, family taxation, or housing subsidies. These measures often strengthen the traditional gendered divisions by encouraging men's breadwinner roles and mothers to withdraw from the labour market to carry out full-time childcare and household activities. At the same time, support for work-life reconciliation and gender equality is missing in the region (Gietel-Basten et al., 2022; Szalma et al., 2022), which distinguishes them from the pronatalist policies of the Nordic countries.

Thus, in our study, we examine how environmental concerns, such as climate change and overpopulation, are related to the reproductive choices of women of reproductive age in Hungary. To shed more light on these processes, we conducted interviews with 44 women between fall 2020 and spring 2022. Our research contributes to this body of research as the first to investigate how climate change concerns and reproductive choices interact in the pronatalist family policy context and how mothers make sense of their motherhood and mothering practices in the situation of state pronatalism and climate crisis in Hungary.

## **4.2. Background and Previous Research**

Several recent studies focused on the link between reproductive choices and climate change. Some have identified individuals who refrain from having children due to their heightened environmental concerns, driven by the desire to protect their potential offspring from the detrimental effects of climate change (Arnocky et al., 2012; Helm et al., 2021; Schneider-Mayerson & Leong, 2020). However, in Allen and Wiles's qualitative study (Allen & Wiles, 2013) on elderly childless people from New Zealand, only a few participants mentioned that their non-parenthood was actively chosen to prevent environmental harm or because they had concerns about the overpopulation of the planet. O'Driscoll and Mercer (2018) examined childless individuals in the United Kingdom, and they found that this kind of reasoning, that one is not having children to

save the world, exists among childless women. Environmental reasons appeared among the motives for voluntary childlessness among the respondents of other earlier studies, as well (Carmichael & Whittaker, 2007; Gillespie, 1999).

A recent study (Helm et al., 2021) conducted a content analysis of reader comments on articles and of semi-structured interviews conducted in the United States and New Zealand to explore the role of climate change considerations in reproductive attitudes and motivations to remain childfree. The content analysis revealed that many readers expressed fears and anxiety related to the negative implications of having children, as childbearing contributes to overpopulation and overconsumption. Views also emerged in which commentators were worried about the quality of life of the next generation. Not having biological children was often considered the best sustainable behavior to reduce one's carbon footprint, and a group of readers claimed those who have children in the current environmental climate are selfish (Helm et al., 2021).

Arnocky et al. (2012) found similar findings based on previous studies: all around the world, many couples choose non-parenthood to reduce their personal effect on the environment, while others are afraid that the well-being of their potential children will be threatened by poor environmental quality, so they choose to remain childless. Both standpoints are covered in the exploratory survey of Schneider-Mayerson and Leong (2020). According to their results, almost 60% of American respondents aged 27 to 45 years had serious concerns about the carbon footprint of procreation. Being very or extremely concerned about the well-being of existing, expected, or hypothetical children in a world characterized by climate change was highly common: 96.5% of participants shared this view: younger people and those undecided about whether to have children being more concerned with climate change were overrepresented.

However, other research has suggested a positive association between climate concerns and intended number of children (De Rose & Testa, 2015a; 2015b; Schneider-Mayerson, 2021). In the analysis by De Rose and Testa (2015a; 2015b) of 2011 Eurobarometer data of the 27 European Union (EU) countries, the relation between climate change concerns and the number of additionally intended children was positive among those who already had one child. These findings were tested in the reverse direction as well, and the results suggest many people are concerned about climate change because they are worried about the wellbeing of their offspring (De Rose & Testa, 2015a).

Schneider-Mayerson's recent research (2021), based on open-ended survey questions, revealed a possible mechanism behind the contrasting results. He distinguished

four different groups, where the motivations of the first two groups explain the mechanism behind the positive relationship between fertility and environmental protection. Parents or potential parents belong to the first group, who believe that without children they would not be motivated to fight for the environment. Parents or potential parents in the second group include those who expect that their children will (or would) become climate activists or pro-environmental voters or would contribute to the transition to a more sustainable world in other ways. Childless people who think the cost of parenting would take energy and time away from the project of fighting climate change constitute the third group, while in the fourth group, we find those who use fertility as a socio-political tool. For example, they use their reproductive potential to influence environmental attitudes and politics. However, Schneider-Mayerson (2021) focused solely on climate leftists (liberal and progressive climate-concerned people), so it is not surprising to observe such strong activist motives.

The issue of overpopulation and fertility goes back as far as Malthus's overpopulation theory, introduced in the late eighteenth century. He stated that exponential population growth will endanger linear food production, thus leading to famine (Mann, 2022). The concept of overpopulation itself is racist and classist in the sense that poor women in the developing world are often made the scapegoats of overpopulation and are expected to have fewer children (Mann, 2022; Dyett & Thomas, 2019). Simultaneously, research shows that overpopulation is not the root of the problem; rather, it is overconsumption (Stephenson et al., 2010).

More general research shows that confidence in technological progress can also affect reproductive choices (Gonella et al., 2019). For example, those who are worried about climate change and overpopulation may not restrict their reproductive choices because they trust that technological progress will solve the problem. People might also separate climate change-related worries and reproductive choices because they think the answer to a systemic problem should come from economic and political leaders who have a stronger role in the development of the problem (Schneider-Mayerson & Leong, 2020).

There is a scarcity of studies investigating our main topic within the Central-Eastern European region. Notably, one such study conducted a comparative analysis of the Visegrad Group (V4) countries and found that these societies are not uniform in the sense how climate change concerns are related to people's ideal family size. In Slovakia, heightened concerns regarding climate change are linked to a preference for a larger ideal family size. Conversely, in the Czech Republic, the association is reversed, and it is only

evident when individuals are asked about their personal aspirations for family size, while in Hungary, the same correlation emerges only when discussing the topic at a more general level. This pattern can potentially be attributed to traditional family orientations and conservative values, which likely serve as key explanatory factors (Szczuka, 2022).

### **4.3. Hungarian context**

Hungary belongs to the developed countries where the population is ageing and shrinking, but people have high incomes and consumption levels. However, compared to the Western European countries Hungary lags behind in the average household net-adjusted disposable income per capita and the life expectancy at birth in Hungary is around 76 years, five years lower than the OECD average of 81 years (OECD, 2023).

In Hungary, Eurobarometer data (European Commission, 2021) show that climate change is a grave problem according to 81% of respondents (compared to the EU average of 78%), while only 8% (EU: 18%) believe it the single-most serious problem facing the world. According to most respondents, it is the responsibility of business, industry, and national governments to tackle climate change, while less than one in four respondents (well below the EU average) felt a personal responsibility to address the problem. Nevertheless, 67% claimed they had taken action to fight climate change recently, which is a higher proportion than the EU average (64%)(European Commission, 2021).

The Orbán governments in power since 2010 have introduced a series of population policy measures with the clear aim to encourage childbearing in order to stop population decline. Thus, the policy context is characterized by pronatalist family policies, where pronatalism can be defined as an ideological and political project that aims to encourage childbearing by female members of a society (Hašková & Dudová, 2021). Furthermore, in Hungary, pronatalist policies are often embedded in the nationalist discourse, such as the current concerns regarding declining birth rates and the shrinking population in the country, labelling the demographic situation a “national catastrophe” and worrying about “the death of the nation” (Melegh, 2016).

As part of the government’s pronatalist approach, several measures were introduced in 2018 to encourage women to have more children, such as a lifetime personal income tax exemption for women who give birth to and raise at least four children and the availability of a low-interest loan for women under 40 who marry for the first time. Furthermore, one-third of this incurred debt is waived after the birth of a second child, and the entire loan is cancelled after the birth of a third child. Most of the family policy

measures are focused on women, which shows that pressure to have more children is placed primarily upon them (Szalma, 2021).

Although the Orbán governments have been pursuing a strongly pronatalist family policy since 2010, the number of births did not increase between 2010 and 2022: 90,335 live births in 2010 and 88,491 in 2022 (Központi Statisztikai Hivatal [KSH], 2023). However, the total fertility rate has improved slightly, from 1.25 to 1.52. (KSH, 2023). This apparent paradox can be attributed to the fact that the number of reproductive-age women has declined in the meantime. Nevertheless, the total fertility rate of 1.52 in 2022 is far below the desirable fertility rate of 2.1.

Pronatalism views women primarily as mothers responsible for reproduction to increase the population or even prevent the death of the Hungarian nation; Russo (1976) called it a “motherhood mandate,” meaning it is imperative for women to bear and rear children. In Hungary, most women have internalized the concept of the motherhood mandate, and many agree with the statement that “a woman has to have children to be fulfilled” in Hungary (Szalma, 2014). In this sense, voluntarily childless individuals are considered a risk to the survival of the nation and are often perceived as choosing independence and freedom over taking responsibility for raising children (Gillespie, 1999; Koropecj-Cox & Çopur, 2015; Shapiro, 2014). Women who do not want to become mothers must frequently face stigmatization, such as being called selfish for being a career-oriented person (Paksi et al., 2022; Szalma & Takács, 2018b). Despite government efforts to strengthen traditional roles, women tend to have their first child at a relatively late age in Hungary.

#### **4.4. Data and Methods**

The research presented herein is exploratory and novel in nature, because women’s reproductive choices in relation to climate change and embedded in the pronatalist context have not been examined in Hungary until now. To gain more insight into these issues, we conducted semi-structured interviews with women of reproductive age in the period between September 2020 and March 2022. Our selection criteria included childless women and single-child women between the ages of 18 and 45 years. We focused on childless and single-child women because they have fewer children than the average woman in Hungary. The upper age limit of 45 was justified by statistical data showing that it is rare for a woman to become a parent for the first time in Hungary above this age (Kapitány & Spéder, 2021). The youngest in our sample of 44 women was 21

years old, while the oldest was 44 years old. The sample was built in two stages: First, we used our social networks to identify initial contacts, then subsequent respondents were found through referrals to acquaintances using snowball sampling. Before starting the interview, all interviewees provided informed consent after being explained the details of the applied data-collection procedures, confidentiality, and voluntary participation.

The interviews took place while Hungary was over the most serious lockdowns following the outbreak of the COVID-19 pandemic. Because the pandemic partly restricted personal contact, we decided to mix interview modes by considering the interviewees' preferences. Thus, most of the interviews were conducted online (on various platforms, such as Zoom, Skype, etc.), but some were conducted in person. Furthermore, we must note that the last couple of interviews were conducted after the outbreak of the Russian-Ukrainian conflict in February and March 2022.

Our sample included interviewees from different geographical areas within Hungary: 22 were from Budapest, the capital; 17 were from other towns; and five were from small villages. Regarding age groups, nine women belonged to the youngest cohort (20–24 years), 16 were aged 25–29 years, nine were aged 30–34 years, seven were aged 35–39 years, and three were aged 40–45 years. There were four educational subgroups: five with a low-level education (lower than completed secondary school); five with a medium-level education (completed secondary school); nine who were enrolled in higher education institutions; and 25 who were highly educated. Regarding marital status, most were married (15) or in cohabiting relationships (18), six were in a living–apart–together (LAT) relationship, and five were single (one was a single mom). In total, 21 women did not have children and another 21 had one child; further, two women were pregnant at the time of the interview. Eighteen women had a child under five years of age, while three women had a school-age child (see Table 5 for participant demographics).

**Table 5. Participant demographics**

Group		Number of participants
Age group (years)	20–24	9
	25–29	16
	30–34	9
	35–39	7
	40–45	3
Highest education level	Elementary school	5
	Secondary school	5
	Student enrolled in higher education	9
	Higher education degree	25
Place of residence	Capital city	22
	Other town or city	17
	Village	5
Partnership status	Married	15
	Cohabitation	18
	LAT	6
	Single	5
Parental status	One child	21 (18 children aged between 0–4, 3 children aged 5–12)
	Pregnant	2
	No children	21
Religious status	Actively practices religion	9
	Religious in her own way	11
	Not religious	24
Total		44

The interviewees were asked to choose a fictitious name, so we could identify the research material related to them later, while preserving anonymity. (These names are also used in this study when referring to or quoting our interviewees.) Most interviews lasted about 40–50 minutes, and they were tape-recorded, with the recorded interview material transcribed verbatim. The interview guide included topics related to one’s perceptions of their own family and family practices; reproductive attitudes; employment and partnership history; opinions on climate change, overpopulation, and the COVID-19 pandemic; and future plans. Through the interviews, we gained rich retrospective biographical narratives, with a focus on the interviewees’ private and family lives, including their experiences, desires, and intentions regarding having children. Interviews were transcribed and both authors used open coding to identify key themes related to

climate change and fertility independently. We then consolidated our themes: the first is the general perception of climate change and attitudes related to its mitigation, followed by our main topic, the link between fertility and climate change. It was then divided into the following sub-topics: the concept of the carbon footprint, overpopulation, and concern about the future of children in the light of climate change. In this study, we did not extensively delve into the short-term effects of the COVID-19 pandemic situation on fertility, as the purpose of this study was specifically to investigate the relationship between climate change, overpopulation, and reproductive decisions.

We should note two primary limitations in our sample selection. First, we intentionally did not focus on specific groups, such as women experiencing significant eco-anxiety. Our aim was to gain a broad understanding of how women, in general, perceive climate change and how it is reflected in reproductive choices at a general level and not among the selective minorities. This approach, however, has a potential drawback regarding our results, that we do not get a picture of the positions of devoted climate activists on the topic, and since the target group of several research were these individuals (Schneider-Mayerson, 2022; Zaremba et al., 2022), we need to be cautious when comparing our results with those of other research.

Another limitation of our research is that interviewees living in the capital and with a higher education were overrepresented in our sample, thus we rather gain insight into the perspectives of those who might be more concerned about climate change than people with lower education levels living in rural areas.

## **4.5. Results**

### **4.5.1. Perceptions and taking actions against climate change**

Most of our interviewees reported that they have some concerns about climate change as they experience weather changes such as more frequent extreme weather events (massive storms, hailstorms, drought etc.), and rising average temperatures (hot summers, mild winters) in their lives. These observations of the weather seem to be the primary way for people to perceive climate change. Beyond these, additional effects of climate change were mentioned such as water and food shortages, species at risk of extinction, possible negative health impact, economic recession, raising costs of production and transportation etc. Highly educated women or students enrolled in higher education talked about invisible future consequences of climate change (e.g., mental health effects), and they reported the strongest worries or climate anxiety. We observed a pattern in the interviews

wherein the participants did not seem overly concerned about the impacts of climate change as it had not yet been affecting their daily lives, however, they envisaged that the crisis would intensify and have repercussions at some point in the future.

Participants, regardless of their level of worry, felt some kind of personal obligation to take action against climate change, but opinions differed concerning the extent of an individual's responsibility: some felt they could not make a difference, as a single person could do very little compared to what a company or government regulation could do to address the situation. Among the many things one can do to help mitigating climate change, participants tended to mention selective waste collection or various forms of waste reduction such as carrying reusable bags, going to package-free shops, using washable diapers, buying second-hand clothes. In addition to these, efforts to reduce emissions (less travel by plane and car, rather changing to public transport and bicycle; saving energy; not turning on the air conditioner etc.) and the use of environmentally friendly detergents were brought up as examples. Some reported that they compost, follow a vegetarian diet, or reduce their water consumption.

The source of knowledge and perceptions of climate change can be, among other things, news consumption. Reading about the potential negative impacts of climate change often appeared in a context that evoked negative feelings, highlighting the seriousness of the issue. Kate (26, highly educated, pregnant, lives in the capital), who is otherwise optimistic about future climate mitigation both by companies and individuals, reckons that if she started to read news and articles about the environmental crisis, it would raise her stress levels significantly so that she tries to stay away from doing so. Emily (27, highly educated, mother, from a town), who also perceives the impact of climate change through her experience working at a ski resort witnessing the shortening of seasons due to the snow conditions, said: *“Obviously, one listens to the news [...], and one can see that in various parts of the world, there are increasingly severe droughts, ongoing wildfires, and obviously, people see that this is not normal. This is clearly the result of something, and what else could it be the result of if not this [climate change].”* They connected their own experiences and what they heard in the news with the idea that this is indeed the effect of climate change, but the connection was not so clear for everyone.

Learning from each other and convincing others to lead more environmentally friendly lives was regarded as a feasible way to mitigate climate change, as Marie's (28, highly educated, childless, from a town) case illustrates it: *“For example, I have managed*

*to get my mother to collect the garbage selectively, even though she thought it was gibberish. I feel that this is a huge step, a huge achievement in her life.*” She is moderately worried about the repercussions of climate change, believing that it would not intensify within the next generation’s life, but she holds it a very important individual responsibility to actively take actions against the process. The knowledge transfer seems to work in the direction from younger to older, but having more and more environmentally conscious friends was also mentioned by 26-year-old Kate, indicating the role of the peer group as well.

#### **4.5.2. Climate change and fertility**

Based on previous research (De Rose & Testa, 2015a; 2015b; Helm et al., 2021; Schneider-Mayerson & Leong, 2020; Schneider-Mayerson, 2021; Szczuka, 2022), the direction of the relationship between climate change and reproductive intentions might be two-way. First, we present what interviewees think about the idea that their reproductive choices might have an influence on the process of climate change. Then we present thoughts on another global perspective, overpopulation. Finally, we take a look at the relationship from the opposite direction and present interviewees’ thoughts on how climate change influences the future of their potential children.

##### ***The concept of the carbon footprint***

Most of our interviewees were concerned with climate change, and there were examples when these concerns were incorporated into reproductive choices, however, this was not the dominant pattern within our sample. Victoria (40, highly educated, childless, from a village), who was not engaged in any significant environmental activities, expressed, *“I don’t think climate change could be mitigated or stopped by reducing reproduction; I do not perceive such a connection.”* With her partner, they had been attempting assisted reproductive techniques for quite some time in their quest to start a family. Her argument was based on her views of climate change that it was a slow process to which people can adapt. She was not alone in her view: interviewees often expressed they should not adjust their own reproductive choices to their concerns about climate change. Olga (23, highly educated, childless, from Budapest) strives to plan her everyday activities in an environmentally conscious manner, aiming to make eco-friendly choices when it comes to travel, shopping, and reducing her consumption of animal-based food products. Regarding climate change mitigation, and how it is linked to reproductive choices, she said: *“Obviously, you can do small things, but I think it would take a stronger global cooperation to solve it, especially from a business viewpoint, so, it doesn’t play a*

*role in the choice of whether to have children.*” Similarly, other participants emphasized that little can be done at the individual level to tackle climate change – mentioning efforts to reduce water or electricity consumption, and collecting waste separately –, and they use this to justify their views that there is no point adjusting reproductive choices to these circumstances.

Further, two radical views emerged in our sample. Two women belong to the first group of extreme views, who felt eco-anxiety to such an extent that they have altered their reproductive choices. Dora (21, university student, childless, from Budapest), who was bothered by the thought that the state views women merely as potential mothers, considering their sole purpose to be giving birth, plans to give up on having children because of its environmental impact: *“The thought crossed my mind that I would rather adopt than give birth to a child.”* Besides her, Barbara (27, highly educated, mother, from Budapest), who is currently on maternity leave with her baby, but works as a freelancer, reported that because of what she perceives as destruction of the natural environment and severe overpopulation, she has hesitated to have children at all. According to her original fertility plan, she desired to have three or four children, but she ultimately decided to have *“two at most, which would replace us in terms of population.”* Barbara therefore felt that in this situation reducing the number of children she originally wanted was the appropriate solution.

In addition to them, some women who were about to have a child reported having faced the dilemma of whether to have children because of climate change. Kate (26, highly educated, pregnant, from Budapest), who makes efforts to reduce her waste production (even considering the zero waste lifestyle) and believes in the effectiveness of environmentally conscious upbringing and education, said, *“My whole life’s ambition was to be a mother...so I wouldn’t want to choose between having a child now or saving the world by not having a child.”* In every case where this dilemma arose, the response was choosing to become a mother.

In addition to the patterns presented so far on how climate change concerns may affect interviewees’ reproductive choices, we found disapproving attitudes regarding the adaptation of fertility plans to climate change concerns when we approached the question from another angle. We asked what they thought about those who choose not to have children because of climate-change-related considerations. For example, Helena (42, low education, mother, from a village), who would have liked to have another child, but for medical reasons could not, sarcastically said, *“Those who don’t have children because of*

*this are not normal.*” Similarly, Hannah (29, low education, mother, from a town), a mother of a one-year-old child who plans to have more children soon, said, *“I wouldn’t even talk to someone like that, because a child is not an object; we cannot just decide whether we need it.”* They claimed that dealing with environmental threats and climate change are not part of their everyday lives in any way. It is clear from their viewpoints that they regard childbearing as an obligation and a necessary part of life, reinforcing the widespread view in Hungary that a woman needs a child to be fulfilled in Hungary.

It is interesting to note that this approach is not only observed among women who are less concerned about climate change, but also among women who take climate change seriously and are taking actions against it in their daily lives. Christina (30, secondary education, childless, from Budapest), who otherwise tries to pay attention to the reduction of waste production and water consumption, and she is very concerned about the process of climate change, said: *“I have a friend who doesn’t have any children because of climate change; I think she lies to herself—she is selfish, and that’s her excuse”*. This kind of approach has emerged in the context of the motherhood mandate in Hungary.

Another interviewee, Jasmine (26, highly educated, mother, from a town), who had always planned to have a big family, says that although she herself is anxious about climate change, she thinks that those who claim climate change is the reason for their childlessness may have other reasons behind it, so it is certainly not the only one. She herself is worried for these women because *“women who say that now might want to have children when they’re 35 or 40”*, when it is no longer certain they can conceive naturally. In Jasmine’s case, we can witness not just the societal pressure for motherhood (motherhood mandate), but also the common resistance to accepting that not having children can be a deliberate choice.

### ***The concept of overpopulation***

Some interviewees asserted a link between climate change and fertility, but only Barbara (27, highly educated, mother, Budapest) linked overpopulation (and climate-change-related concerns, as discussed above) to her reproductive choice by giving up on having more than two children. All other interviewees reported that their reproductive choices were not influenced by this issue. Not even those concerned with climate change considered overpopulation as a problem in this part of the world where the population is ageing. According to Marta (31, highly educated, childless, from Budapest):

*“I don’t think this applies to the European society, and I think fertility must be an individual’s decision. So, if there’s a loving family that wants to have a child, then they should have one. And that should be the case anywhere around the world.”*

Marta is not alone with her view, as other participants emphasized that they think overpopulation is not a European problem, so the issue does not affect their reproductive choices. Others reflected on this issue from a religious perspective: Claudia (32, secondary education, mother, from Budapest), who is currently on maternity leave with a two-year-old child and plans to have two more children, and formerly worked as an evangelical religious teacher, said: *“God created us to multiply.”* Those who take these positions believe the problem is not the population size itself, but the unequal distribution of resources globally: where there is a lack of resources, the fertility rate is high.

However, some other interviewees were not so permissive about the reproductive choices of people from the developing world. For example, Julia (27, university student, pregnant, from a town), who also actively practiced religion, expressed, *“I believe we should limit the number of children born in countries with such an awful lot of people. You can live happily with 2–3 children instead of 8–9.”* Meanwhile, some interviewees emphasized that Hungarians should have more children even though other parts of the world are overpopulated, because they worry about the death of the nation. As Noemi (27, university student, childless, from a town) explained:

*“It is not necessarily our problem that India, Asia, and Africa are overpopulated, because Europe is shrinking, and the Hungarian population, in particular, is shrinking rapidly, so I understand that it is a shared responsibility of the world to protect the Earth, but not at the expense of our own race.”*

Other women voiced the same concerns as Noemi about the declining population and the death of the nation, and most agreed with the Hungarian family policy aimed at countering the ageing population by encouraging to have more children via financial support and tax refunds. However, some expressed concerns about that if someone fails to meet the non-repayable loan condition of having three children, they will have to pay it back later, or about families with school-age children receiving insufficient support from the state. However, we also found women who expressed complete disagreement with the pronatalist family policies as they felt it violated the important value of gender equality. Dora (21, university student, childless, from Budapest), who was considering adoption because of her high level of climate anxiety, emphasized, *“Women are being diminished, so to speak, to live only for the purpose of being mothers and having children,*

*and that's all they are.*" A similar opinion was expressed by Lily (36, highly educated, mother, from a village), who works as an entrepreneur, and raises a four-year-old child, *"They want to buy women's wombs, [...], it's outrageous. I absolutely refuse to have children for money or support."* Otherwise, she was unsure whether she wanted to have another child due to the changed circumstances and increased financial and health-related uncertainties in the COVID-19 pandemic situation. The basis of this uncertainty was that her partner had lost his job during the pandemic.

As in the case of climate change, here we also found arguments for that the concerns about overpopulation are just an excuse for foregoing motherhood. For example, Clara (34, highly educated, mother, from Budapest), who herself is eco-conscious in her everyday life and believes in the power of environmentally conscious upbringing, describes it as follows:

*"I think, for anyone who says they don't want children because of overpopulation, it is just a good excuse; they never really wanted them. It is a blanket [overpopulation] under which they can hide so that others don't question their choice."*

As voluntary childlessness is not a widely accepted choice in Hungary, women whose reproductive decisions are affected by worries regarding overpopulation or climate change are seen as hiding behind these macro-level concerns to avoid the motherhood mandate.

### ***Climate change has negative effects on the future of children***

All the women in our sample want to have children, though some expressed worries about the future of them. Emma (26, highly educated, mother, from Budapest) perceives the future of children born today as quite dramatic: *"I think they will have to deal with serious problems that were partly caused by us. This includes climate change."* Other participants had similar negative views: concerns emerged about sources of healthy nutrition, lack of water, and the consequent economic crisis. Yet, these worries did not influence their own childbearing decisions. Isabelle's (32, highly educated, mother, from a town) example illustrates the dilemma well: *"I do regard climate change as a serious threat, so much that I even asked my husband whether I should give birth to a child at all. I mean, will they be able to grow up at all?"* Despite her concern, she still decided to have a child recently. In her case, this question rather emerged only theoretically, because in other parts of the interview she declared she could not imagine her life without children, and that she also plans to have two more. However, she is uncertain whether she would be able to realize her intention of a third child because of her age. This hesitancy signalled

the presence of macro-level uncertainties around her, such as concerns about climate change, the COVID-19, and also about the Russian-Ukrainian war. She overcame this kind of hesitancy by realizing that she must accept uncertainties that she cannot change, since these were also present *“in our mothers’ time”*, and children were still born that time. However, she takes actions to mitigate climate change by trying to avoid unnecessary hoarding, and she also tried to involve her husband in her climate-conscious behaviour.

Reflecting on the view that some people do not want to expose children to the adversities of the warming planet, Frida (23, university student, childless, from a town) said, *“My sister sees the world through a similar lens; she thinks it would not necessarily be good for a child to live in this world. I can identify with this viewpoint sometimes, but not so blindly.”* It is seen that for young people, the way to get information on this topic is often to share related ideas with each other.

None of the interviewees agreed that one should give up on having children because the future is uncertain. This standpoint was often described as “extreme,” as Kate (26, highly educated, pregnant, from Budapest) evaluated: *“I have some friends whose decision to have children has been affected by climate change. I consider them extreme examples.”* Kate shares the information on the subject with her peers, but she doesn’t accept her friends’ view that they shouldn’t give birth to this world, but rather identifies them as having extreme views on the subject. It is interesting that we cannot find the simple mechanism that those who are most concerned about the climate are the ones who adapt their reproductive choices. Susan (27, highly educated, mother, from Budapest) was of the same opinion, even though she perceived climate change as a profoundly serious threat:

*“There are things we cannot really foresee, and anyways, we cannot spare our children, so then people shouldn’t have had children during the plague either, or then, during the whole twentieth century, all children were exposed to such things that no one wants for their children.”*

She was not alone in explicitly stating that childbearing should not depend on negative narratives.

The other alignment strategy between climate change and the concern about children’s future is to emphasize that future generations will be more environmentally aware. Emma (26, highly educated, mother, from Budapest), a doctor currently on

maternity leave with her one-year-old child, believes women should have children because the new generation will have a different attitude to the environment:

That's why I think that we do need to reproduce, and we do need to have a generation growing up, because many middle-aged people have learned or got used to a certain way of life, so they're not going to change. And unfortunately, it's going to be up to the new generation.

While Emma's conclusion is that children born now have a role to play in mitigating climate change, Marta (31, highly educated, childless, from Budapest) and Lena (39, highly educated, mother, from a town), mother of a 4-year-old, believe that parents have a role to play too: it should be the parents' duty to raise their children to be environmentally aware, and if they do so, from an environmental perspective, parents will contribute more to the planet's future than if their children had never been born. As Marta argued:

*“Yes, you have to have children, and yes, you can have children in this world, but you have to raise them in such a way that they are aware of these things and that they don't contribute even more to climate change.”*

Yet another viewpoint appeared among the participants: Amy (26, highly educated, mother, from Budapest) explained that how parents raise their children is also important. She focuses on raising her child in a way to do the least harm to the planet: *“I am in a position where I can afford washable diapers and package-free detergent, so our financial status allows us to have a child while trying our best to do it in the most environmentally friendly way.”* However, she stressed that to raise children in a sustainable way it requires a good financial status.

#### **4.6. Discussion**

The aim of this study was to explore how reproductive choices and eco-anxiety intersect with each other in Hungary by conducting 44 semi-structured interviews with women. We found, in line with Eurobarometer data (European Commission, 2021), that concern about climate change is a relevant issue in Hungary, our interviewees reported some level of concern in this regard. It seems that weather observations are the primary method for people to perceive climate change in Hungary. Highly educated women or those enrolled in higher education reported stronger worries or climate anxiety than their lower educated counterparts which may indicate that high levels of education can lead to eco-anxiety because of the higher chance to learn about climate change and

environmental issues. We also found that young women's main information sources are their peers.

Furthermore, also in line with the European Commission (2021), we found that people rarely see climate change as an individual responsibility. Accordingly, a pattern can be detected that there are women with high levels of concern who are not willing to change their reproductive choices because of climate change. Nevertheless, they do many other things at an individual level to mitigate climate change, for example by selective waste collection or various forms of waste reduction such as carrying reusable bags, going to package-free shops, using washable diapers, buying second-hand clothes. However, we found an opposite pattern which shows that women who are highly worried about climate change might modify their original reproductive choices by choosing to have fewer children or planning to adopt a child instead of having their own biological one. Sometimes, concern about climate change is not the only macro-level factor causing uncertainty about reproductive choices. A combination of different uncertainties such as climate change concern, the Russian-Ukrainian war and COVID-19 together cause reproductive choices to be uncertain.

Moreover, we have found a new phenomenon in the Hungarian sample: some interviewees condemned women who do not want children because of the consequences of climate change. Our interviewees generally regard women who choose to be childfree as selfish. Moreover, they consider climate change and overpopulation as false reasons for not having children. It seems that the motherhood mandate overwrites all negative narratives in Hungary: no matter how concerned a woman is about the future (including climate change), she has no right to break the social norm that expects her to become a mother. This may also be the reason that in our sample, of the four groups identified by Schneider-Mayerson (2021), only the two classifications which explain the positive link between climate change and reproductive choices were present. No individuals felt that the cost of parenting would impede them from focusing on climate change, or that they would be using their reproductive choice as a socio-political tool. However, our results may differ from those of Schneider-Mayerson because our sample was not composed of climate activists.

Regarding overpopulation, our participants see it as a non-relevant issue in Europe, and some of them emphasize that the number of children should be reduced among women in the developing world. This result coincides with previous research (Mann, 2022; Dyett & Thomas, 2019), where women living in developing countries are

blamed for overpopulation. Some mentioned they would not approve having more than 2-3 children in countries where there is a lack of resources, while others stressed, on the contrary, that childbearing should be an individual decision everywhere. Nevertheless, in the European context and especially in Hungary, rather than overpopulation, population decline is considered a more important problem. Furthermore, many interviewees' position fits into the nationalist discourse which stated that having children is important to avoid the death of the nation (Melegh, 2016). Most women also agree with the pronatalist family policy, which generously supports families with three or more children. However, some participants feel that the state degrades women by treating them only according to their roles as mothers.

We have found a strong link between eco-anxiety and concerns about the well-being of one's children. This result is consistent with previous research that found a positive association between fertility and climate change-related concerns (De Rose & Testa, 2015a; 2015b; Schneider-Mayerson, 2021). To reduce the contradiction between having children and worrying about climate change, most people view having children from the point as it is a possible solution to climate change. They believe future generations will be more environmentally aware, and some of them also mentioned feeling responsible for raising their children in a sustainable way and teaching them to be environmentally conscious.

Even though this is not a representative sample, and these women were not specifically chosen according to their views on climate change (none of them was a climate activist), it is striking that there was no childless woman in our sample who definitely would not want to have children: even those who currently do not feel that way have left the question open for the future. This can indicate that in a pronatalist society, not having a child can be perceived as a violation of norms. These findings partly contradict previous research in Anglo-Saxon settings, where the choice of voluntary childlessness because of environmental reasons can be observed among young people (Helm et al., 2021). This contrary result may be due to two reasons. One is the widespread attitude in Hungary that a woman can only be happy if she has children (Szalma, 2014), and the another is that our sample is not based on climate activists like Schneider-Mayerson's (2021) sample.

#### **4.7. Limitations and Further Research**

This study was an explanatory one since no other studies have examined how anxiety about climate change can affect women's reproductive choices in a pronatalist context. However, our study has a few limitations. One of them is that the interviews were conducted during the COVID-19 pandemic that may have influenced our results by introducing an additional factor of uncertainty into the process of making reproductive decisions, and these factors might interact and amplify the uncertainties related to reproductive choices. For example, some participants mentioned that earlier they did not consider climate change a serious threat, but during the pandemic, they started to collect more information on the environmental crisis, because the pandemic brought their attention to other global problems such as climate change. However, for others, the pandemic situation suppressed their earlier environmental awareness because they devoted more focus to avoid a COVID-19 infection. To eliminate the pandemic effect, it would be beneficial to repeat the study in the post-pandemic era. However, there can always be macro-level uncertainties which cannot be eliminated. For example, the outbreak of the war between Russia and the Ukraine has also exacerbated the shadows of the future among our interviewees who were interviewed after February 2022. The other limitation of the study is that women with higher education degree were overrepresented in the sample, which might cause some bias such as our highly educated interviewees were more concerned about climate change than individuals with lower level of education. To obtain an overall picture of the link between eco-anxiety and reproductive choices, we need a representative study conducted after the pandemic. It could also be important to explore whether similar patterns are found in CEE countries, and it is necessary to further examine the link between climate change and reproductive choice in other societies. Future research should focus on the perspectives and attitudes of men, as well.

## **5. What Shapes Attitudes Towards Voluntary Childlessness? Climate Change and Other Macro-Level Concerns in a Pronatalist Context<sup>9</sup>**

### **5.1. Introduction**

In an era of unprecedented global challenges, macro-level uncertainties such as climate change are increasingly shaping perspectives on reproductive choices. This study investigates the relationship between macro-level concerns and attitudes towards voluntary childlessness, with a focus on climate-related worries in Hungary, a country where pronatalist values remain dominant. Beyond climate change, we also examine whether other macro-level worries (droughts, epidemics etc.) function similarly in shaping attitudes towards women's and men's choice not to have children.

Despite growing attention to this topic, research examining the distinct implications of various macro-level concerns remains scarce. A recent Swiss study (Zimmermann et al., 2024) found that climate anxiety is linked to young adults' motivations regarding childbearing, with perceived threats to the present and future environment of children playing a mediating role. Our study builds on similar research questions but extends the focus beyond young adults and examines these dynamics in a pronatalist context.

Adding further complexity to this analysis is the COVID-19 pandemic, which coincided with our data collection in 2020. COVID-19 also embodies a form of macro-level concern related to uncertainty, which influences reproductive decisions (Malicka et al., 2021). The pandemic has intensified existing fears about the future while introduced new uncertainties, potentially amplifying or mitigating concerns (Evensen et al., 2021; Szalma & Szczuka, 2024) related to reproductive attitudes, i.e. positive and negative evaluations of having and raising children (Davis et al., 2019).

Climate change is perceived as a very serious issue by most Hungarians (European Commission, 2021), but responsibility is placed mostly on businesses, industry, the national government, and the EU. A Hungarian study confirms that people perceive climate change as a current and urgent issue, but they also see it as a geographically distant phenomenon (Jankó et al., 2018). Prior research suggests gender differences in

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<sup>9</sup> This chapter is based on the article "What Shapes Attitudes Towards Voluntary Childlessness? Climate Change and Other Macro-Level Concerns in a Pronatalist Context" that is submitted to European Societies. The article is a joint work with Ivett Szalma and Judit Takács. My contribution to our joint work amounts to 75%.

environmental concerns: women are more likely to express worries and uncertainties related to climate change than men in Europe (Lübke, 2022), and young men tend to be less engaged with environmental causes than women (Henn et al., 2022).

Understanding attitudes towards different family structures, such as those characterised by voluntary childlessness, is particularly relevant in Hungary, where traditional gender role expectations are prevalent. Having children is considered the absolute norm (Szalma & Takács, 2018b), and it is actively encouraged by government policies (Szalma et al., 2022). Although voluntary childlessness remains relatively rare in such a context, any shifts in attitudes towards this choice can illuminate underlying changes in societal norms and values.

In a European comparison, disapproval of voluntary childlessness is particularly high in Hungary, as shown in a recent study comparing responses to prescriptive and proscriptive items on voluntary childlessness across 27 European countries, where Hungary consistently ranks among the least accepting societies (Szalma et al., 2025). In most European countries, voluntary childlessness rates are higher among men than among women (Miettinen & Szalma, 2014). Additionally, a gender-based double standard can be observed, with men facing greater disapproval than women for choosing to remain childless (Merz & Liefbroer, 2012; Rijken & Merz, 2014). Thus, our analysis separately examines attitudes towards men's and women's childlessness.

This article contributes to the literature by extending research beyond the more widely studied macro-level uncertainties, showing that environmental anxieties also matter in shaping attitudes towards voluntary childlessness in Hungary. Our findings highlight that negative future prospects are more consistently linked to acceptance of voluntary childlessness than abstract climate concerns.

## **5.2. Background**

### **5.2.1. Theoretical background**

The perception of climate change raises questions about how individuals engage with long-term societal risks and uncertainties. Theoretical approaches that address risk perception and decision-making can offer insights into the ways in which concerns about the future influence attitudes towards family and reproduction.

One such perspective is Beck's (1992) risk society approach, which highlights the role of modern uncertainties in shaping individual choices. According to Beck, hazards are not limited in time and space: risks we perceive today will affect future generations,

and geographical boundlessness refers to the idea that global hazards can affect everyone. In his later work, Beck (2015) addressed the pressing issue of climate change as a global hazard that transcends national boundaries and demands a cosmopolitan perspective. People living today recognise that norms and rules that were once guidelines for decisions are re-evaluated in light of a threatening future (Beck, 2015).

These collective risks require international cooperation and significant societal change (Beck, 2015), but this is often hindered by a focus on national self-interest, which is particularly relevant in Hungary, where the discourse frequently revolves around the nation-state rather than global or planetary issues (Vancsó, 2024; Varga, 2021). For example, in a recent qualitative study investigating young people's concerns regarding overpopulation, the vast majority of respondents indicated that they were not concerned about overpopulation but rather about the declining Hungarian population, emphasizing the importance of having more Hungarian children (Szalma & Szczuka, 2024).

This nationalist framing stands in contrast to the concept of 'environmental citizenship'. Dobson (2007) argues that the behavioural changes necessary for a sustainable future can be achieved by transforming attitudes, and environmental citizenship serves as a pathway to this transformation. Environmental citizenship, according to Dobson (2007), could be defined as a commitment to sustainability, acknowledging that rights and responsibilities extend beyond national borders, and that actions—whether public or private—have environmental consequences. This attitude as a motive would last longer than other incentives for behavioural change, since an environmental citizen views living sustainably as a duty to ensure that others may live well.

The clash between national self-interest and cosmopolitan responsibility reveals a key conflict in public attitudes, which is particularly significant in pronatalist contexts: local concerns, such as preserving the national population, may contradict broader environmental and sustainability goals and responsibilities.

### **5.2.2. Attitudes towards voluntary childlessness**

Studies on European countries and the US found that at the individual level, attitudes towards voluntary childlessness are more favourable among women, higher educated, non-religious and younger individuals than among men, lower educated and religious individuals (Dimitrova & Kotzeva, 2022; Koropecj-Cox & Çopur, 2015; Szalma et al, 2025). Women holding more favourable attitudes towards the choice of not having children can be interpreted as resulting from the higher opportunity costs

associated with motherhood than fatherhood (Merz & Liefbroer, 2012). Attitudes towards voluntary childlessness are more favourable among those with less traditional than among those with traditional views related to family (Koropeckyj-Cox & Çopur, 2015).

According to North American (Koropeckyj-Cox and Pendell, 2007) and European findings (Rijken & Merz, 2014; Szalma et al., 2025), positive attitudes toward voluntary childlessness are most prevalent among people who are childless themselves.

At the macro level, attitudes towards voluntarily childless individuals are more favourable in countries that can be viewed as front-runners in the Second Demographic Transition (SDT), such as Northern and Western European countries (Merz & Liefbroer, 2012; Rijken & Merz, 2014). Previous studies and recent data show that in Central and Eastern Europe attitudes towards voluntary childlessness are particularly negative (European Social Survey European Research Infrastructure [ESS ERIC], 2023; Merz & Liefbroer, 2012; Rijken & Merz, 2014; Sobotka & Testa, 2008; Szalma et al., 2025).

A gender-based double standard in attitudes toward voluntary childlessness has been observed in many European countries, though not in most former socialist countries except Slovenia, as men tend to face greater disapproval than women for choosing to remain childless (Merz & Liefbroer, 2012; Rijken & Merz, 2014). Eicher et al. (2016) found an association between gender equality and acceptance of voluntary childlessness among women, that is, women who live in highly unequal societies judged other women more severely if they choose not to have children than those who live in more equal societies. Greater levels of gender equality in a country were linked to larger double standards favouring women: it seems that people (particularly women) are more tolerant with other women's (but not men's) fertility decisions in gender-equal societies (Rijken & Merz, 2014).

### **5.2.3. Encouraging reproduction in a selective pronatalist context**

Contemporary European societies face multiple demographic challenges including the declining fertility rates and the total fertility rate remaining below the replacement level (Sobotka, 2005). This phenomenon may be viewed as a typical first world problem in the sense that the monetary cost of having children is often a less inhibiting factor than the related costs expressed in terms of time. In response, many European countries encourage their citizens to have “planned children”, some by introducing targeted policies to lower the childcare burden, especially for mothers (Doepke & Kindermann, 2019). These measures often include paid maternity and

paternity leave with job security, publicly subsidized childcare and/or parental leave for childcare at home, as well as flexible work hours for parents.

Some European countries also experiment with financial incentives. For example, the Hungarian government, in power since 2010, has introduced a range of such measures. These include the ‘baby-expecting loans’, offering money upfront, based on a future promise of having children, the family tax credit for dependent children and a lifetime income tax exemption of mothers having at least four children, that is being gradually extended to include mothers with three and eventually two children.

Evidence suggests that such pronatalist family policies can be effective when they support not only childbirth but also maternal employment and long-term childcare. Brini (2020) found that across Europe more generous family-friendly policies were associated with a lower likelihood of being childless by the ages of 35–39, and with higher number of children. Moreover, fertility intentions are more likely to be realised in Western societies where childbearing is regarded as a personal matter rather than a normative expectation, and where fewer people believe that having a child gives meaning to a woman’s life, which is a more widespread belief in Eastern European countries (Spéder & Bálint, 2024).

In the European context Hungary provides specific kinds of pronatalist policies, exalting parenthood and encouraging reproduction with a well-defined target group of white, straight, affluent middle-class people whose reproduction is “worthy of encouragement” with legislative frameworks, tax and other benefits (Takács, 2018:78). Contemporary Hungarian pronatalist family and population policy measures, characterized by a—historically far from unique—mixture of selective pronatalism and selective antinatalism (Heitlinger, 1991), utilize exclusionary and selective power technologies, expressing the preference of the government towards the reproduction of certain social groups, while rejecting and hindering that of others (Hašková & Dudová, 2020; Herke, 2025). These political and policy conditions can directly affect public attitudes towards childbearing and voluntary childlessness.

#### **5.2.4. Macro-level concerns and attitudes towards childbearing**

Uncertainty stemming from macro-level factors such as economic shifts, changing life circumstances, sudden or long-lasting crises like the COVID-19 pandemic, wars or economic recessions has been shown to impact not only reproductive attitudes but also fertility trends (Aassve et al. 2021; Billari et al., 2006; Perelli-Harris & Hilevych, 2023; Sobotka et al., 2011), as fertility preferences often adjust in response to such uncertainties.

These effects are not limited to responses to past events but are also connected to concerns or negative narratives about the future (Vignoli et al., 2022; Ivanova & Balbo, 2024). A growing body of research shows that global threats and perceived future uncertainty can influence people's attitudes towards childbearing (Krähenbühl, 2022; Zaremba et al., 2022). The probability of becoming a parent is lower when the future of the next generation is perceived as worse than the present (Ivanova & Balbo, 2024).

Although research increasingly acknowledges the role of macro-level threats in shaping reproductive decisions, we still know less about how these considerations translate into societal views, specifically, attitudes towards voluntary childlessness in general (Dillarstone et al., 2023).

A key research direction explores the interplay between different macro-level concerns and how the complex, multi-factorial sense of uncertainty affects long-term decision-making. In a Hungarian qualitative study, participants often grouped together major global stressors, like the COVID-19 pandemic, the Russia–Ukraine war, and climate change, as sources of anxiety that contributed to their doubts about bringing children into an uncertain world (Szalma & Szczuka, 2024). Similarly, a Swedish study found that participants blurred global threats like overpopulation, climate change, and war, describing procreation as irresponsible or even unethical in such a context (Bodin et al., 2019). In interviews with young adults in New Zealand and the U.S., the most common climate-related reasons for foregoing parenthood included overconsumption, overpopulation, and general uncertainty about future environmental, political, and social conditions (Helm et al., 2021).

This study specifically focuses on climate change among the macro-level factors, along with threats that are linked to or considered consequences of climate change, such as ecological disasters, floods, droughts, and increasingly frequent pandemics (Gorji & Gorji, 2021). A systematic review of the literature (Dillarstone et al., 2023) found that most studies report a negative relationship between climate change concerns and the intention to have children. However, there is—albeit weaker—evidence for the opposite, too. Attention on the link between environmental concern and childbearing is increasingly shifting from worries about the impact of having children on the planet to concerns about how environmental issues will affect children themselves: the central focus is the well-being and quality of life of future generations (Krähenbühl, 2022; Schneider-Mayerson & Leong, 2020), resonating with a broader segment of the population.

A key question is whether environmental concern or ‘eco-anxiety’ is linked to perceiving future threats as more severe. Among 18–25-year-old Swiss students, Zimmermann et al. (2024) found that climate anxiety was a strong predictor of heightened threat perceptions, which then were associated with weaker motivations for having children and stronger motivations against it. These results support the mediating role of perceived threats between climate anxiety and childbearing intentions. Apart from Zimmermann et al. (2024), who found no significant gender differences, research has not yet explored how gendered climate perceptions relate to childbearing attitudes and approval of voluntary childlessness (Dillarstone et al., 2023). There is, however, extensive literature on gender differences in levels of worry. It varies across the different aspects of climate concern, with men generally being more sceptical and less concerned than women, yet sometimes perceiving climate change’s negative impacts as more severe (Poortinga et al., 2019).

Attitudes and concerns related to climate change may also shift when other threats become more prominent. The finite pool of worry hypothesis (Weber, 2006) suggests that people have limited cognitive and emotional resources for concern, thus, increased worry about one threat may reduce attention to others. During the global economic recession started in 2008, concerns about climate change might have been displaced by economic worries (Whitmarsh, 2011). Nevertheless, this direction of change in attitudes is not clear in the case of COVID-19: for some, the pandemic heightened environmental awareness; for others, it led to disengagement and a focus on personal safety. In a UK study, perceptions of severity and reality of climate change did not diminish with the decreasing attention to it during the pandemic (Evensen et al., 2021). A Hungarian interview study conducted during COVID-19 found both reactions: some participants reported learning more about climate change, while others deprioritized it due to the immediate threat of the virus (Szalma & Szczuka, 2024). Reflecting a similar dynamic, Sisco et al. (2023) analysed 13.5 million tweets and documented a decline in attention to climate change around the outbreak of the pandemic, which later returned to pre-pandemic levels. While attention shifted, worry about climate change remained stable, suggesting evidence for a finite pool of attention, but less support for a finite pool of worry.

Understanding people’s perception of climate change is crucial, as it varies significantly from awareness through concern to how directly they are affected by the crisis. Given these differences, in this article we aim to capture more than one aspect of climate-change-related concerns and explore how these perceptions may shape views on

voluntary childlessness. Our research question is the following: Can concerns about climate change and about the expected lowering of future living standards predict approval of women's and men's choices to remain childless?

### **5.3. Materials and Methods**

#### **5.3.1. Data**

The analysis uses data from a Hungarian survey on the social impacts of COVID-19, conducted in the fall of 2020, including a section on childbearing attitudes and plans. The online data collection was carried out between October 27 and November 3, 2020. The sample (N=1000) was designed using a multi-layered stratified random sampling method, aiming to approximate the distribution within the Hungarian population aged 18 to 65 as closely as possible in terms of key demographic characteristics (gender, age category, education, type of settlement, region).

#### **5.3.2. Measures**

##### ***Dependent variables:***

Attitudes toward women's and men's voluntary childlessness were measured by the following question (separately for women and men):

“To what extent do you approve or disapprove of a woman's/man's choice not to have children?”

Responses were given on a 5-point Likert scale (1 = strongly disapprove, 3 = neither approve nor disapprove, 5 = strongly approve).

##### ***Independent variables:***

*Climate change concern* is one of the two main predictors. Participants were asked to indicate on a 5-point Likert scale how much they were worried or not worried about climate change at the time of the data collection (1 = not at all worried, 5 = very worried).

*Negative future prospects* constitute the other main predictor. To assess individuals' future prospects in light of macro-level threats, we used their agreement scores (measured on 5-point Likert scales, where 1 = strongly disagree, 5 = strongly agree) to the following three statements: “Children born today will have a much lower standard of living than ours due to i) ecological disasters; ii) increasingly frequent pandemics; iii) droughts, water shortages, and food scarcity.” Responses to these items were highly correlated ( $r > 0.8$ ,  $p < 0.001$ ), and the internal consistency of the items was very high (Cronbach's  $\alpha = 0.94$ ). Therefore, principal component analysis was applied to derive a single component representing the three elements as a weighted linear

combination of this set of variables. The newly created variable (principal component) is referred to as “negative future prospects” in the analysis<sup>10</sup>.

*Pronatalist attitude:* As a result of the pronatalist family policy in Hungary, there is a strong societal expectation for individuals to have children. The models of our analysis include a control variable measuring respondents’ agreement with the following statement: “childbearing is important because the population of Hungary is declining” (5-point Likert scale, where 1 = strongly disagree, 5 = strongly agree). By including this variable, we capture a part of the pronatalist attitude, which is related to the concerns about population decline, and control for its presumed negative relationship with attitudes towards voluntary childlessness.

We also controlled for the following factors and covariates that were likely to be correlated with both the dependent and the independent variables: *COVID-19-related concern* (5-point Likert scale, 1 = not at all worried, 5 = very worried)—since the data was collected during the second wave of the pandemic in Hungary.

Additional control variables included gender, age group (4 categories), highest level of education (3 categories), place of residence (3 categories), whether respondent is a parent, and religiousness (11-point scale).

All continuous and Likert-scale independent variables (including climate concern, negative future prospects, pronatalist attitude, COVID-19-related concern, and religiousness) were mean-centred. This facilitates interpretation, as the model thresholds then correspond to the cutpoints on the latent attitude scale for an average respondent (i.e. when all predictors are at their mean).

### **5.3.3. Analytical strategy**

As the dependent variables were based on Likert-style ordinal data, we tested our hypotheses using ordered logistic regression to model how climate-change-related concerns and negative prospects of the future predicted attitudes towards the choice of women and men to be voluntarily childless. We also tested for interactions between the main predictor variables and respondents’ gender.

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<sup>10</sup> An exploratory factor analysis was also conducted together with the climate concern and COVID-19-related concern variables to assess possible latent variables and to make sure that the three items of negative future prospects make up a distinct dimension from the other variables assessing macro-level concerns. The analysis yielded a two-factor solution (eigenvalues = 2.86 and 1.26). The three future prospect items loaded very strongly on the first factor, while climate change concern and COVID-19 concern loaded mainly on the second factor but also showed moderate cross-loadings on the first, indicating only partial overlap with the future prospect dimension. The latter two variables are moderately correlated with each other.

First, we estimated 10 separate bivariate regression models to examine the association between the independent and dependent variables, and to see whether there are raw differences in attitudes towards voluntary childlessness of women and men across demographic background variables. Then, we continued with estimating two, nested multiple regression models. Model 1 includes both main independent and control variables. Model 2 contains all control variables and two interaction terms between the main predictors and gender, as we assumed that the relationship between macro-level concerns and attitudes towards voluntary childlessness may differ between women and men.

## **5.4. Results**

### **5.4.1. Descriptive statistics**

Table 6 presents the distribution of the sample by key demographic background variables, as well as mean scores of the responses to survey questions used in the analysis (along with the exact wording of these questions).

In the sample, the most common response on the 5-point Likert scale measuring attitudes towards voluntary childlessness was the neutral ('neither approve nor disapprove') option, with the mean score of 3.02 for women's such choice and 3.00 for men's, respectively. Attitudes towards women's childlessness were more polarised, though with only a marginally higher proportion of strong approval and strong disapproval compared to men's childlessness. Our results show slight differences from recent ESS data. There, the mean approval score of voluntary childlessness is 2.53 in Hungary, which is well below the overall EU average of 3.21 (ESS ERIC, 2023). Not only the average approval scores but also the combined share of 'approve' and 'strongly approve' responses are higher in our survey (15.5% for women's and 15.1% for men's childless choice): according to ESS, Hungary ranks second to last in the EU with only 6.55% approving this choice (ESS ERIC, 2023).

Respondents of our survey were rather worried about climate change ( $M = 3.37$ ,  $SD = 1.12$ ), but when they were asked about worsening future conditions, on average they rather disagreed that living standards of children born today would be lower than ours due to ecological disasters ( $M = 2.78$ ,  $SD = 1.10$ ), droughts, water shortages, and food scarcity ( $M = 2.73$ ,  $SD = 1.09$ ), or due to increasingly frequent pandemics ( $M = 2.64$ ,  $SD = 1.08$ ).

**Table 6. Sample distribution and mean scores by variables used in the analysis**

Variable	Categories/scale	N	%	Mean (SD)
<b>Gender</b>				
	male	491	49.1	
	female	509	50.9	
<b>Age group</b>				
	18–25	130	13.0	
	26–35	240	24.0	
	36–45	200	20.0	
	46–65	430	43.0	
<b>Highest level of education</b>				
	primary education	466	46.6	
	secondary education	343	34.3	
	tertiary education	191	19.1	
<b>Place of residence</b>				
	Budapest (capital of HU)	178	17.8	
	other town	522	52.2	
	village	300	30.0	
<b>Is a parent</b>				
	yes	583	58.3	
	no	417	41.7	
<b>Religiousness:</b>	11-point scale (0 = not at all religious, 10 = very religious)			
	<i>Regardless of whether you belong to any church or denomination, how religious do you consider yourself?</i>			3.85 (3.21)
<b>Climate change concern:</b>	5-point Likert scale (1 = not at all worried, 5 = very worried)			
	<i>Please indicate how much you are currently concerned or not concerned about climate change.</i>			3.37 (1.12)
<b>Negative future prospects:</b>	5-point Likert scale (1 = strongly disagree, 5 = strongly agree)			
	<i>Do you agree or disagree that the standard of living for children born today will be much lower than ours due to...</i>			
	<i>... ecological disasters?</i>			2.78 (1.10)
	<i>... droughts, water shortages, and food scarcity?</i>			2.73 (1.09)
	<i>... increasingly frequent pandemics?</i>			2.64 (1.08)
<b>COVID-19-related concern:</b>	5-point Likert scale (1 = not at all worried, 5 = very worried)			
	<i>Please indicate how much you are currently concerned or not concerned about the (COVID-19) pandemic situation.</i>			3.37 (1.20)
<b>Pronatalist attitude:</b>	5-point Likert scale (1 = strongly disagree, 5 = strongly agree)			
	<i>Do you agree or disagree that childbearing is important because the population of Hungary is declining?</i>			3.27 (1.17)
<b>Attitudes towards women's voluntary childlessness:</b>	5-point Likert scale (1 = strongly disapprove, 3 = neither approve nor disapprove, 5 = strongly approve)			
	<i>Please indicate to what extent you approve or disapprove of a woman's choice not to have children.</i>			3.02 (0.79)
<b>Attitudes towards men's voluntary childlessness:</b>	5-point Likert scale (1 = strongly disapprove, 3 = neither approve nor disapprove, 5 = strongly approve)			
	<i>Please indicate to what extent you approve or disapprove of a man's choice not to have children.</i>			3.00 (0.77)

#### 5.4.2. Results from ordered logistic regressions

Tables 7 and 8 presents unstandardized estimates from ordered logistic regression models predicting attitudes towards women's and men's voluntary childlessness, respectively. Results of bivariate regressions are shown in the first columns of Table 7 and 8. The analysis revealed that negative future prospects were significantly associated with more supportive attitudes towards both women's and men's voluntary childlessness ( $p < 0.001$ ), while there is no evidence for an association between climate change concerns and the dependent variables ( $p > 0.1$ ). Concern about COVID-19 neither predicted attitudes towards voluntary childlessness for either women or men ( $p > 0.1$ ). As expected, the belief that childbearing is important since Hungary's population is declining was significantly associated with less approval of voluntary childlessness of both genders ( $p < 0.001$ ). Men, parents, people in the oldest age group (46–65) and more religious people were less supportive of both women's and men's voluntary childlessness. Risk of approval differed by highest level of education significantly only regarding men's voluntary childlessness, those with tertiary education degree being more approving of this decision than those with primary education. Residents of Budapest, the capital city were more accepting of the childless choice of both genders than those living in villages.

Estimates of multivariate regressions (Models 1 and 2) are shown in the last two columns of Tables 7 and 8. The positive association between negative future prospects and attitudes towards women's voluntary childlessness remained robust across multivariate models ( $p < 0.01$ ). The interaction term between being male and negative future prospects indicates no evidence of gender moderation. Concerns about climate change were associated with attitudes towards women's voluntary childlessness in Model 1, suggesting a modest negative relationship between climate change concern and approval of the choice to remain childless ( $p < 0.1$ ). However, in Model 2, where an interaction term between gender and the main explanatory variables is introduced, the estimate for climate concern is no longer statistically significant. Although the interaction term itself does not reach statistical significance, to gain further insight, we examined the models separately by gender<sup>11</sup>. The results show that the negative association between climate concern and approval of women's voluntary childlessness is statistically significant among men ( $p < 0.05$ ), while it remains non-significant in the women's subsample ( $p > 0.1$ ).

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<sup>11</sup> Results of separate regression models by gender are not shown in the tables included.

**Table 7. Parameter estimates of ordered logistic regressions. Dependent: attitudes towards women’s voluntary childlessness**

	Bivariate			Multiple regression					
				Model 1			Model 2		
	B	Robust S.E.	p	B	Robust S.E.	p	B	Robust S.E.	p
<b>Climate change concern</b>	-0.016	(0.069)	0.813	-0.150 <sup>+</sup>	(0.083)	0.072	-0.026	(0.112)	0.818
<b>Negative future prospects</b>	0.320 <sup>***</sup>	(0.046)	0.000	0.282 <sup>***</sup>	(0.055)	0.000	0.206 <sup>**</sup>	(0.072)	0.004
<b>COVID-19-related concerns</b>	-0.083	(0.063)	0.186	-0.061	(0.077)	0.424	-0.056	(0.077)	0.467
<b>Pronatalist attitude</b>	-0.653 <sup>***</sup>	(0.074)	0.000	-0.509 <sup>***</sup>	(0.078)	0.000	-0.499 <sup>***</sup>	(0.078)	0.000
<b>Gender</b> (ref: female)									
male	-0.699 <sup>***</sup>	(0.140)	0.000	-0.774 <sup>***</sup>	(0.164)	0.000	-0.767 <sup>***</sup>	(0.164)	0.000
<b>Age group</b> (ref: 46–65)									
aged 18–25	0.605 <sup>*</sup>	(0.244)	0.013	-0.453	(0.291)	0.119	-0.426	(0.289)	0.140
aged 26–35	0.897 <sup>***</sup>	(0.187)	0.000	-0.152	(0.232)	0.512	-0.113	(0.234)	0.628
aged 36–45	0.526 <sup>**</sup>	(0.176)	0.003	0.165	(0.184)	0.371	0.148	(0.185)	0.424
<b>Highest level of education</b> (ref: primary)									
secondary education	-0.028	(0.156)	0.855	-0.066	(0.172)	0.703	-0.078	(0.174)	0.653
tertiary education	0.123	(0.175)	0.481	0.075	(0.186)	0.685	0.059	(0.187)	0.753
<b>Place of residence</b> (ref: village)									
Budapest	0.487 <sup>*</sup>	(0.202)	0.016	0.272	(0.233)	0.243	0.299	(0.235)	0.203
other town	0.235	(0.167)	0.158	0.177	(0.189)	0.349	0.215	(0.192)	0.262
<b>Parent</b> (ref: childless)	-0.930 <sup>***</sup>	(0.147)	0.000	-0.724 <sup>***</sup>	(0.164)	0.000	-0.717 <sup>***</sup>	(0.165)	0.000
<b>Religiosity</b>	-0.130 <sup>***</sup>	(0.022)	0.000	-0.089 <sup>***</sup>	(0.023)	0.000	-0.094 <sup>***</sup>	(0.023)	0.000
<b>inter1</b> : male * climate change concerns							-0.249	(0.153)	0.104
<b>inter2</b> : male * negative future prospects							0.160	(0.100)	0.110
Threshold 1				-4.237 <sup>***</sup>	(0.295)	0.000	-4.217 <sup>***</sup>	(0.298)	0.000
Threshold 2				-2.849 <sup>***</sup>	(0.271)	0.000	-2.823 <sup>***</sup>	(0.273)	0.000
Threshold 3				1.307 <sup>***</sup>	(0.248)	0.000	1.345 <sup>***</sup>	(0.252)	0.000
Threshold 4				2.547 <sup>***</sup>	(0.268)	0.000	2.589 <sup>***</sup>	(0.271)	0.000
<i>N</i>		1000			1000			1000	

Notes: Unstandardized estimates from ordered logistic regressions with robust standard errors in parentheses. Bivariate models include only the respective explanatory variable and the dependent variable in separate regressions; Model 1 of multiple regressions includes both main explanatory and all control variables; Model 2 also includes two interaction terms between the main predictors and gender. Estimated thresholds from the bivariate models are not shown. <sup>+</sup>  $p < 0.1$ , <sup>\*</sup>  $p < 0.05$ , <sup>\*\*</sup>  $p < 0.01$ , <sup>\*\*\*</sup>  $p < 0.001$ .

**Table 8. Parameter estimates of ordered logistic regressions. Dependent: attitudes towards men's voluntary childlessness**

	Bivariate			Multiple regression					
				Model 1			Model 2		
	B	Robust S.E.	p	B	Robust S.E.	p	B	Robust S.E.	p
<b>Climate change concern</b>	-0.022	(0.066)	0.740	-0.110	(0.082)	0.179	0.018	(0.106)	0.863
<b>Negative future prospects</b>	0.254***	(0.049)	0.000	0.198***	(0.056)	0.000	0.086	(0.075)	0.255
<b>COVID-19-related concerns</b>	-0.050	(0.061)	0.412	-0.015	(0.076)	0.844	-0.007	(0.076)	0.931
<b>Pronatalist attitude</b>	-0.620***	(0.072)	0.000	-0.497***	(0.077)	0.000	-0.483***	(0.077)	0.000
<b>Gender</b> (ref: female)									
male	-0.405**	(0.134)	0.002	-0.410**	(0.154)	0.008	-0.400**	(0.153)	0.009
<b>Age group</b> (ref: 46–65)									
aged 18–25	0.490*	(0.216)	0.024	-0.404	(0.264)	0.125	-0.369	(0.261)	0.158
aged 26–35	0.857***	(0.190)	0.000	-0.072	(0.239)	0.762	-0.025	(0.240)	0.918
aged 36–45	0.546**	(0.172)	0.002	0.204	(0.174)	0.241	0.186	(0.176)	0.289
<b>Highest level of education</b> (ref: primary)									
secondary education	0.080	(0.155)	0.605	-0.011	(0.173)	0.949	-0.018	(0.175)	0.916
tertiary education	0.376*	(0.168)	0.025	0.238	(0.188)	0.206	0.225	(0.190)	0.235
<b>Place of residence</b> (ref: village)									
Budapest	0.570**	(0.196)	0.004	0.158	(0.223)	0.479	0.191	(0.225)	0.396
other town	0.189	(0.162)	0.243	-0.009	(0.180)	0.959	0.029	(0.183)	0.876
<b>Parent</b> (ref: childless)	-1.005***	(0.145)	0.000	-0.857***	(0.166)	0.000	-0.858***	(0.166)	0.000
<b>Religiosity</b>	-0.128***	(0.021)	0.000	-0.095***	(0.022)	0.000	-0.101***	(0.022)	0.000
<b>inter1:</b> male * climate change concerns							-0.267 <sup>+</sup>	(0.146)	0.067
<b>inter2:</b> male * negative future prospects							0.236*	(0.104)	0.024
Threshold 1				-4.254***	(0.299)	0.000	-4.240***	(0.300)	0.000
Threshold 2				-2.543***	(0.274)	0.000	-2.519***	(0.275)	0.000
Threshold 3				1.325***	(0.251)	0.000	1.371***	(0.254)	0.000
Threshold 4				2.654***	(0.273)	0.000	2.709***	(0.274)	0.000
<i>N</i>		1000			1000			1000	

Notes: Unstandardized estimates from ordered logistic regressions with robust standard errors in parentheses. Bivariate models include only the respective explanatory variable and the dependent variable in separate regressions; Model 1 of multiple regressions includes both main explanatory and all control variables; Model 2 also includes two interaction terms between the main predictors and gender. Estimated thresholds from the bivariate models are not shown. <sup>+</sup>  $p < 0.1$ , \*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$ .

As presented in Table 8, the results for attitudes towards men's voluntary childlessness were largely consistent with those found for women's childlessness, however, with some key differences regarding the main explanatory variables. Negative future prospects were positively associated with approval of men's voluntary childlessness in the first multivariate model ( $p < 0.001$ ). In Model 2, the interaction with gender signals that the slope seems to be steeper for men than for women ( $p < 0.05$ ). This suggests that as negative future prospects increase, approval of men's choice of voluntary childlessness rises more sharply among male respondents. Concerns about climate change did not show any significant relationship with attitudes towards men's childlessness in neither model ( $p > 0.1$ ). Adding the interaction term in Model 2 showed that while there was no significant difference between concerned and non-concerned women, men were less likely to approve other men's voluntarily childless choice if they were more concerned about climate change ( $p < 0.1$ ). Separate models estimated for male and female subsamples support this interpretation, showing a significant negative association only among men ( $p < 0.05$ ).

The other control variables showed similar patterns in the multivariate Models 1 and 2 as observed in the bivariate ones, with a few exceptions. The results for these are consistent between attitudes towards women's and men's childless choice. Pronatalist attitude, being male, parent status, and religiosity consistently showed a significant negative relationship with approval of voluntary childlessness, indicating that those with the belief that childbearing is important since Hungary's population is declining, men, parents and more religious individuals were less likely to approve of childlessness. There is no evidence for the impact of COVID-19-related concerns, age group, educational level or place of residence.

## **5.5. Discussion and Conclusions**

This study examined how concerns about climate change and other macro-level uncertainties of the future relate to attitudes towards voluntary childlessness in Hungary, a country where pronatalist values are strongly embedded in both cultural norms and state policies. While the most severe consequences of climate change are less visible in the everyday life in Hungary, environmental changes like droughts and extreme weather events are raising public awareness. Growing eco-concerns and negative future prospects may challenge pronatalist efforts by making voluntary childlessness or having fewer

children seem more reasonable and justified within a society where parenthood is considered an almost obligatory life stage according to social norms.

Contrary to findings from European countries (Merz & Liefbroer, 2012; Rijken & Merz, 2014), attitudes towards women's and men's childless choice are very similar in our sample. In line with the literature (Dimitrova & Kotzeva, 2022; Koropecj-Cox & Çopur, 2015; Koropecj-Cox and Pendell, 2007; Merz & Liefbroer, 2012; Rijken & Merz, 2014), women, childless and non-religious people held more favourable attitudes towards voluntary childlessness than men, parents, and religious people; however, our results only partially confirm these studies' findings about the differentiating effect of age and education.

Results from ordered logistic regressions indicate that perceptions of future risks are linked to attitudes towards childbearing, yet the patterns are complex and shaped by gender differences. Concerns about future living standards show a positive association with approval of both women's and men's voluntary childlessness, aligning with the findings about the role of future uncertainties in Krähenbühl (2022), Zaremba et al. (2022) and Ivanova and Balbo (2024), and in line with Zimmermann et al.'s (2024) results about the positive relationship between greater perceived threats and negative childbearing motivations. The interaction between future prospects and gender highlight that while men's approval of voluntary childlessness is consistently lower than women's, their approval rises more sharply as negative future prospects increase, resulting in a steeper slope for men than for women. However, this interaction effect is present only when talking about men's choice of not having children.

The links with climate change concern appear similarly nuanced, particularly in how this factor interacts with gender. We found no evidence for a relationship between women's climate change-related concerns and their attitudes towards voluntary childlessness of either gender. In contrast, among men, greater concern about climate change was associated with lower approval of voluntary childlessness, particularly in relation to men's childlessness, where the interaction term reached statistical significance. For attitudes towards women's childlessness, evidence is weaker for gendered differences. A positive association between climate concern and reproductive intentions is not unprecedented: four studies, included in the systematic review by Dillarstone et al. (2023) found some (weak) evidence for this. For example, certain climate-concerned individuals justify their positive reproductive intentions by arguing that environmentally

conscious parents raise their children with the same values, thus contributing to a better world (Schneider-Mayerson, 2021). Qualitative findings from Zambia (Rosen et al., 2021) show that some men argue for a greater number of children because larger families might provide for themselves better during adverse environmental conditions. However, studies examining attitudes (and not intention) in the same systematic review (Dillarstone et al., 2023) consistently found that greater concerns were significantly linked to more negative attitudes towards having children. Thus, to our knowledge, our results are the first to demonstrate a positive link here.

This unique pattern might signal the abstract and intangible nature of climate change concerns. In a recent interview study of young Hungarian women, every participant still aspired to have children, despite they expressed anxiety about climate-change-related threats, suggesting that such worries may not necessarily translate into altered reproductive plans (Szalma & Szczuka, 2024). Rüttenauer's (2023) study also evidences that people may acknowledge environmental threats but still struggle to connect these abstract concerns with other areas of their lives: as, in the study, being directly exposed to climate-change-related events did not always lead to changes in environmental behaviour.

The question arises: what does the broad and abstract concept of climate change mean to people, and what are we measuring in our research? Lo and Chow (2015) identified distinct dimensions of climate change concern: cognitive, evaluative, and conative components; and highlighted that recognising environmental risks, assessing them, and willingness to take action are not the same. According to Whitmarsh (2008), these dimensions do not correlate in the same way with socio-economic and attitudinal variables. This might also explain why climate concern is related to men's attitudes towards childlessness but not women's. As seen in the literature, men are generally more sceptical but perceive climate change impacts as more severe (Poortinga et al., 2019), and it is possible that a different aspect of climate change concern is more prominent for men when they respond to the question of how worried they are about it. Other findings indicate that men are less pronatalist and less environmentally conscious than women (Henn et al., 2022). This suggests that men are less likely to identify as environmental citizens (Dobson, 2007) and may not accept the reasoning that one might forego parenthood because children would not have the conditions to grow up in a sustainable world and be(come) environmental citizens themselves.

Another key question is why concerns about climate change and concerns about the living standards of the future have contrasting relationships with the approval of voluntary childlessness. Conceptually distinctive dimensions of ‘concern’—as, e.g. issue importance and risk perception were treated differently in the study of Lo and Chow (2015)—offer a possible explanation here as well. Climate change concern is a postmaterialist value (Inglehart, 2007), and in a materialist pronatalist society like Hungary, this concern might reflect more abstract or ideological commitments, therefore might not be perceived as an immediate or concrete threat. By contrast, concerns about future living standards point to more tangible and personally relatable consequences of climate change, which may explain the different patterns observed. Our findings might be paralleled with a very recent and comprehensive Swiss study (Zimmermann et al., 2024), which found that climate anxiety operates entirely through threat perceptions in case of negative, and partly in case of positive childbearing motivations. With the latter, climate concern was directly and negatively related. However, there was no direct relation between climate anxiety and negative childbearing motivations. If climate change concerns indeed operate through threat perceptions, it becomes clearer why our single-item measure of climate change concern yielded inconsistent results in relation with attitudes towards voluntary childlessness.

An additional key finding is that pronatalist attitudes consistently had a negative relationship with the acceptance of voluntary childlessness, signalling a strong nationalistic cultural perspective in Hungary, contrasting Dobson’s (2007) concept of environmental citizenship. Dobson advocates for a cosmopolitan ecological citizenship beyond national borders, encouraging active participation from citizens in promoting sustainability at a global level. This is consistent with Beck’s assertion that, while environmental risks are global in nature, the response to these risks is often shaped by national priorities and local interests, making it difficult to address global challenges effectively. The tension between national self-interest, like preserving Hungary’s population, and global sustainability goals reflects the clash between local and cosmopolitan perspectives. At the same time, we did not find support for the theory of postmaterialist value change, as in the regression analysis, neither younger individuals nor those with higher education levels were found to be more accepting of voluntary childlessness compared to older individuals and those with lower levels of education.

This study has several limitations. First, the measurement of climate concerns in this study was based on a single-item measure, which may not fully capture the complexity of environmental attitudes. Established scales, such as the Climate Change Anxiety Scale (CCAS) (Clayton & Karazsia, 2020) could offer a more comprehensive assessment of climate concerns and allow for a better understanding of their influence on reproductive attitudes. Second, while we found a significant positive association between negative future prospects and attitudes towards voluntary childlessness, causality cannot be established. Further research using longitudinal designs could provide insights into causal mechanisms linking threat perceptions and attitude formation. Moreover, the data was collected during the COVID-19 pandemic, a period of heightened uncertainty and concern. This temporal context may have influenced participants' attitudes and perceptions of the future, potentially limiting the generalisability of the findings to other time periods. Future studies could consider replicating this research in post-pandemic settings to assess whether the observed patterns persist. Finally, while we identified gender differences in the relationship between climate change concern and attitudes towards voluntary childlessness, future research could benefit from a more detailed exploration of these differences across various cultural contexts, examining gender dynamics in countries with different societal norms and levels of gender inequality to compare and contrast findings with those from Hungary.

Our findings suggest that climate change may not primarily concern individuals in terms of long-term consequences but rather in a way that appears to be independent of attitudes towards childbearing in a pronatalist context. This challenges assumptions that climate anxiety directly shapes reproductive attitudes and highlights the need for a more nuanced understanding of how macro-level concerns relate to personal life choices. Nevertheless, the finding that climate change-related uncertainties might shape attitudes towards reproduction raise important questions in contexts such as the pronatalist Hungary. Here, increasing the birth rate is a central policy goal, which creates a tension between ecological and demographic priorities. Understanding how these conflicting priorities play out could offer valuable insights not only for research and policymaking but also for broader societal debates.

## 6. Discussion

Reproductive decisions are becoming more influenced by macro-level anxieties in an increasingly uncertain future. Concerns about climate change, one of the most defining global processes of our time tend to vary worldwide in terms of depth and consequences. Central and Eastern European countries, including Hungary, are increasingly impacted by severe climate change effects<sup>12</sup>. Clearly noticeable environmental changes, such as droughts, warmer seasons, increasingly frequent heatwaves and other extreme weather conditions are shaping public awareness (Bodor et al., 2024). Meanwhile, strong pronatalist policies encourage childbearing in these countries, but eco-concerns and negative future prospects might counterbalance such policies on the long run, influencing people to re-evaluate their reproductive intentions. My thesis focuses on Hungary, where, being a post-socialist country, economy and society went through a great transformation after 1990. Before the change of regimes, education and occupation was strongly connected to each other, reducing uncertainty in the possible pathways in front of young people. From the 1990s on, youth were entering a new, global labour market, facing increased risk and uncertainty (Róbert & Bukodi, 2005). Today's uncertainty, however, cannot be explained only by the post-socialist transition of the country. 30 years after the system change, we must look for other causes, keeping long-term consequences of the historical transition in mind.

This research highlights the presence of macro-level concerns in shaping reproductive decision-making, particularly in a pronatalist context. It contributes to the sociological study of fertility by emphasising the role of broader uncertainties. By integrating perspectives from sociology, demography, and environmental psychology, this thesis advances existing research by examining how different dimensions of concern relate to attitudes around the question of having children, while also considering gendered patterns in these associations. By complementing survey data with interview research, I provide a comprehensive picture of the narratives people hold about the future and parenthood, as well as how they navigate reproductive decision-making amidst growing global uncertainties and interpret their own reproductive decisions in the context of

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<sup>12</sup> See e.g. Mezösi, G., Bata, T., Meyer, B. C., Blanka, V., & Ladányi, Z. (2014). Climate change impacts on environmental hazards on the Great Hungarian Plain, Carpathian Basin. *International Journal of Disaster Risk Science*, 5, 136–146. <https://doi.org/10.1007/s13753-014-0016-3>; Buzási, A., Pálvölgyi, T., & Esses, D. (2021). Drought-related vulnerability and its policy implications in Hungary. *Mitigation and Adaptation Strategies for Global Change*, 26(3), 11. <https://doi.org/10.1007/s11027-021-09943-8>.

climate change, a global pandemic that was unfolding at the time of data collection, and state pronatalism. Furthermore, my thesis argues for the relevance of theoretical frameworks that account for subjective perceptions and future imaginaries, offering an interpretative lens for understanding the complexity and contradictions observed in the relationship between environmental concerns and fertility-related attitudes.

My thesis began with an introduction and a review of the main empirical findings in the field, highlighting both the broader trends and the contradictory results discussed in Chapter 2 (Background) regarding climate change concerns and reproductive attitudes. It then introduced theoretical models that may be capable to explain *environmental childlessness* (Krähenbühl, 2022) as well as cases where individuals with strong climate anxiety still choose to have children. Sociology has been relatively slow to engage with climate change as a research topic (Bhatasara, 2015), and a significant portion of the studies specifically linking climate concerns to fertility have been published in the past five years. Until 2020, very little empirical research had been conducted on the relationship between climate change concerns and individual fertility intentions, and much of the academic work on reproductive choices in the context of climate change had primarily emerged from applied ethics rather than empirical social sciences (Schneider-Mayerson & Leong, 2020). The recent COVID-19 pandemic brought an unprecedented uncertainty shock, amplifying the significance of future-oriented concerns beyond those stemming from past experiences, since even scientists struggled to predict the length and consequences of the crisis (Guetto et al., 2022).

The empirical chapters of this thesis (Chapter 3–5) presented three studies on the relationship between climate change concerns and fertility-related attitudes in the Central and Eastern European context. While all three studies explore the intersection of climate change and reproductive attitudes, they differ in geographical scope, methodological approach, and analytical focus. The first study (Chapter 3), which adopts a comparative perspective, utilises secondary survey data (2011 Eurobarometer) from the Visegrád countries (Czechia, Hungary, Poland, and Slovakia) to examine the link between climate change concern and fertility intentions, measured by ideal family size in general and for the respondents personally, applying logistic regression analysis. In contrast, the second (Chapter 4) and third studies (Chapter 5) focus exclusively on Hungary. The former uses qualitative, semi-structured interviews to explore Hungarian, 18–45-year-old women’s reproductive attitudes, intentions and decisions, as well as their attitudes towards

voluntary childlessness in the context of climate change, while the latter employs ordered logistic regression analysis on nationally representative survey data from 2020 to investigate factors shaping attitudes towards voluntary childlessness (measured on a 5-point Likert-scale, separately assessing individuals' attitudes towards women's and men's choice not to have children). While all studies address the role of climate-change-related concerns, they differ in the ways it is measured: while Chapter 3 uses a dichotomous variable distinguishing those who consider climate change the most serious global problem from those who prioritise other issues; Chapter 5 employs a 5-point Likert scale to assess the degree of concern about climate change and also includes a separate measure of negative future prospects derived from three questions on how respondents foresee the future of the next generation in light of ecological disasters, pandemics, and droughts, water shortages, and food scarcity. Chapter 4, based on qualitative interviews, explores general concerns about environmental changes, including climate change, pandemics, and foreseeable food shortages etc., and it also addresses the question of overpopulation.

Across all empirical chapters, climate change and future uncertainties emerge as relevant concerns and considerations, but do not necessarily translate into changed reproductive intentions and into more accepting attitudes towards voluntarily childless people. Based on Chapter 3, we can see that the relationship between climate concern and ideal family size varies by country: in Hungary, those most concerned about climate change prefer a smaller ideal family size in general but not for themselves personally, whereas in Czechia, the association can be observed only at the personal level, at the margin of statistical significance. In Slovakia, by contrast, climate concern is linked to a larger ideal family size both generally and personally. Chapter 4 further highlights the complexity of this relationship, showing that while Hungarian women acknowledge climate change as a serious issue, their concerns are primarily focused on the future well-being of their children rather than on the environmental impact of childbearing itself. Although some participants mentioned eco-concerns as a reason for planning to have fewer children or planning alternative routes to parenthood, the dominant pattern was rather that, despite high levels of climate concern, they still wanted to have children, as most interviewees consider having children to be an important part of a woman's life. Some even view parenthood as a way to contribute positively to addressing climate challenges by raising environmentally conscious children. The qualitative findings also reveal negative perceptions of those who choose childlessness for environmental reasons.

Chapter 5 examines the possible forming factors of these attitudes and shows that negative future prospects—rather than climate concern as a broad concept—are associated with greater approval of childless choices, both among women and men. However, the relationship between climate change concern and attitudes towards voluntary childlessness differs by gender: a significant negative association was found among men (but not among women) between climate concerns and approval of the choice not to have children. Together, these findings suggest that climate-change-related concerns intersect with broader social norms and personal expectations, shaping reproductive attitudes in complex and sometimes contradictory ways.

Vignoli, Bazzani et al. (2020) proposed the Narrative Framework to explain fertility decisions in times of uncertainty, incorporating both the concepts of ‘shadows of the past’ and ‘the future’ (Bernardi et al., 2019). The framework’s relevance stems from the observation that objective conditions alone cannot fully predict fertility intentions. Even studies that include multiple indicators of economic circumstances fail to entirely account for the relatively consistent fertility declines observed in Western societies (Guetto et al., 2022). An explanation is that individuals facing the same structural constraints do not necessarily make the same choices. Personal narratives and imaginaries play a crucial role, beliefs in the sacredness of the family or an envisioned future with multiple children may encourage childbearing, even in the state or expectations of economic hardship or uncertainty. Guetto et al. (2022) applied the Narrative Framework to COVID-19, studying changes in fertility intentions during the pandemic. Their findings support the argument that past experiences and objective indicators of individuals’ exposure to the health and economic consequences of the crisis had only a limited role in reshaping fertility plans during lockdowns. Instead, the key moderators were subjective perceptions, and even more importantly, expectations and imaginaries in how individuals adapted to an environment of overwhelming uncertainty. This perspective helps explain why, despite pandemic-induced uncertainty, some individuals reported a positive shift in their fertility intentions. For example, a strong positive family imaginary, such as expecting a high level of happiness from childbirth, counterbalanced concerns about the crisis (Guetto et al., 2022).

Building on this theory, I argue that the Narrative Framework can also be applied to interpret the contradictory findings on climate change and fertility intentions. If expectations, imaginaries and narratives of the future significantly shape fertility

decisions under uncertainty, then variations in how individuals picture the future of the planet, or rather, the future of the next generation—whether with hope or despair—may shape their attitudes or contribute to their reproductive responses to climate concerns.

The findings in Chapters 3 and 5, which reveal associations that are inconsistent across multiple levels (between countries, between genders, and depending on which aspect of future-related concerns is examined) are well complemented by the insights from the interviews in Chapter 4. Applying the Narrative Framework to specific cases we might better understand the complexity of reproductive decision-making, and it demonstrates that narratives of the future play a significant role in these choices. Take, for example, Kate, a 26-year-old, highly educated, pregnant woman living in the capital city of Hungary. She was (in the study presented in Chapter 4) among the most concerned and most actively engaged interviewees in addressing climate change, yet she also stated that her “whole life’s ambition was to become a mother” and regarded friends who had altered their childbearing plans due to climate-change-related considerations as “extreme examples”. In her attitudes, we can identify certain steps of the decision-making process as proposed by Vignoli, Bazzani et al. (2020). Guetto et al. (2022) identified these stages in fertility decisions during COVID-19 and emphasised that *perceptions*, which follow *past experiences* and current (socioeconomic) *status* in the model, involve assessing the uncertainty of the present situation but also contain a reference to the future as well. For instance, Kate takes the issue of climate change very seriously, and much of her knowledge and perception of it comes from the media (from which she often distances herself precisely because it would significantly increase her stress levels). Based on this, one might assume that she would be less inclined to have children. However, she states that she is optimistic about future climate mitigation efforts, both from the side of companies and individuals, which aligns with the next step in the decision-making process: *expectations*. These expectations, however, are complemented by *imaginaries*: these occur at an abstract level of imagination, allowing individuals to move beyond their expectations about the future. In Kate’s example, a wishful future imaginary was to fulfil her life goal and become a mother, thus, her positive fertility intentions were formulated despite her deep concerns about climate change. All the former elements are included in the final stage of the process: the *narratives of the future*. Kate’s narrative, which supported her decision to have children, builds on the importance of family as a core value in life and her confidence in climate mitigation efforts, including her own actions (e.g.,

considering a zero-waste lifestyle). The *action support* function of the narrative (Vignoli, Bazzani et al., 2020) is also observable, as she believes in the effectiveness of an environmentally conscious upbringing and education. Thus, her response to the dilemma between uncertainties related to climate change and her personal aspirations ultimately led her to choose parenthood.

Kate's case exemplifies how reproductive decision-making is embedded in broader narratives of the future, shaped by sometimes conflicting perceptions and expectations. More broadly, the findings of this dissertation demonstrate that reproductive attitudes and intentions are rarely the product of a single concern but emerge from the interplay of multiple, sometimes contradictory, considerations. By integrating macro-level concerns, including those about climate change into the study of reproductive attitudes and decision-making, this research highlights the need to approach fertility not merely as a demographic or policy issue but as a deeply social and psychological process, influenced by uncertainty, risk perception, and normative expectations. Taken together, the findings of this dissertation suggest that climate change-related uncertainties can influence how people think about childbearing, even in contexts such as pronatalist Hungary, where increasing the birth rate remains a central policy priority. This creates a tension between ecological and demographic aims that cannot easily be resolved, and the Hungarian case illustrates how strongly these goals can pull in opposite directions. However, the two objectives are not necessarily mutually exclusive: integrative approaches (e.g. sustainable urban planning) exist to address environmental concerns and family-related goals simultaneously. As seen earlier, insights from our qualitative interviews also highlight how individuals themselves navigate this dilemma: several participants described reconciling their desire to have children with their climate anxiety by making environmental consciousness a central part of their parenting, and many emphasised the key role they expect education to play in raising environmentally aware children, in line with earlier findings that school-based initiatives can strengthen students' environmental attitudes (Duarte et al. 2017).

### **6.1. Reflections and future research directions**

The three empirical studies shed light on how environmental anxieties intersect with pronatalist policy frameworks and gendered social expectations in Hungary and the broader Central and Eastern European context. The research questions of this dissertation remain highly underexplored within CEE countries: the first papers appeared only very

recently that address these issues in this region, such as Erát and Bognár's (2024) quantitative study briefly examining how climate anxiety and environmentally conscious behaviour are related to the intended number of children, and Bognár's (2025) qualitative study (in Hungarian), which in many respects replicates the findings of our interview study in Chapter 4. Beyond these, Bastianelli's (2025) research examines the relationship between climate change worries and fertility intentions in Estonia alongside Sweden and Finland. In this sense, my dissertation is pioneering in bringing attention to these questions in a CEE context.

Nonetheless, certain limitations should be acknowledged, in addition to those mentioned in the empirical chapters. Besides noting these, I outline several possible directions for future research, in light of what has already been studied and what still remains unexplored. The studies applying quantitative analysis in my thesis rely on cross-sectional data, limiting the ability to assess causal relationships. Future research could benefit from longitudinal approaches to capture the possibly increasing influence of environmental concerns on reproductive decision-making. Some steps have already been taken in the direction of exploring the perspectives of younger cohorts (Hickman et al., 2021; Rackin et al., 2023), which is a promising starting point for following today's youth into their reproductive years to examine how stable their attitudes remain, and how these attitudes might shift if the perceived effects of climate change intensify, or if a new macro-level threat emerges that is not yet foreseeable. Such anxieties may also influence the timing of childbearing, which is a key demographic issue when considering the tension between global overpopulation on the one hand, and ageing, shrinking European societies on the other.

Expanding the scope of qualitative investigations could further explore how different sociopolitical contexts shape this relationship. Recent work in this area includes Blanton's (2025) study in the United States, where the broader religious landscape in Utah emerged as an influential contextual factor. Perspectives of men are also underrepresented in the research of this area, as are the voices of people with lower levels of education. Additionally, while this dissertation focused primarily on climate change, further studies could examine in more detail how overlapping macro-level uncertainties intersect with environmental concerns in shaping reproductive attitudes.

It is also important to highlight that existing studies tend to more easily interpret findings where climate-related concerns are negatively associated with fertility intentions

or with positive attitudes towards childbearing. By contrast, it remains less thoroughly examined why some individuals, despite high levels of climate anxiety, still decide to have children, or show less acceptance towards those who choose not to. Explanations proposed in the literature seem convincing in particular settings, but they are not necessarily applicable across all circumstances. Such explanations include that, for example, among environmental activists, a common argument is that environmentally conscious parents will raise environmentally conscious children; or in contexts where severe environmental problems make everyday livelihoods difficult—as in Zambia, in Rosen et al.’s (2021) study—larger families may be seen as better able to provide for themselves when all members contribute. Yet even in this case, this was a minority view, because for the majority, drought would rather encourage having fewer children to feed (Rosen et al. 2021). Future research could explore more systematically the multiple reasons why climate concerns might, in various contexts, support positive reproductive attitudes.

Further contributions could also be made by including the perspectives of those with specific insights into environmental processes: for instance, agricultural workers who are directly exposed to droughts and other weather-related impacts, or experts whose professions centre on climate change, thus their threat perceptions may remarkably differ from the average due to their deeper understanding of the processes.

Despite its limitations, this research is a valuable contribution to the ongoing discussion on reproductive decision-making in times of uncertainty. Given the novelty of this research area, my thesis provides a snapshot of a rapidly evolving field that is likely to see significant growth in the coming years. While reviewing the existing literature in such a young field poses challenges due to its limited scope, this dissertation not only contributed three original studies to the discussion but also offered a comprehensive overview of where scholarship currently stands in understanding the deeper links between climate change and reproductive decision-making.

## **Declarations**

At several parts of chapters ‘Introduction’, ‘Background’ and ‘Discussion’, OpenAI’s ChatGPT-4 was employed to assist with language, grammar-checking, and flow. The author carefully reviewed and edited the generated content, assuming full responsibility for the final version of the thesis.

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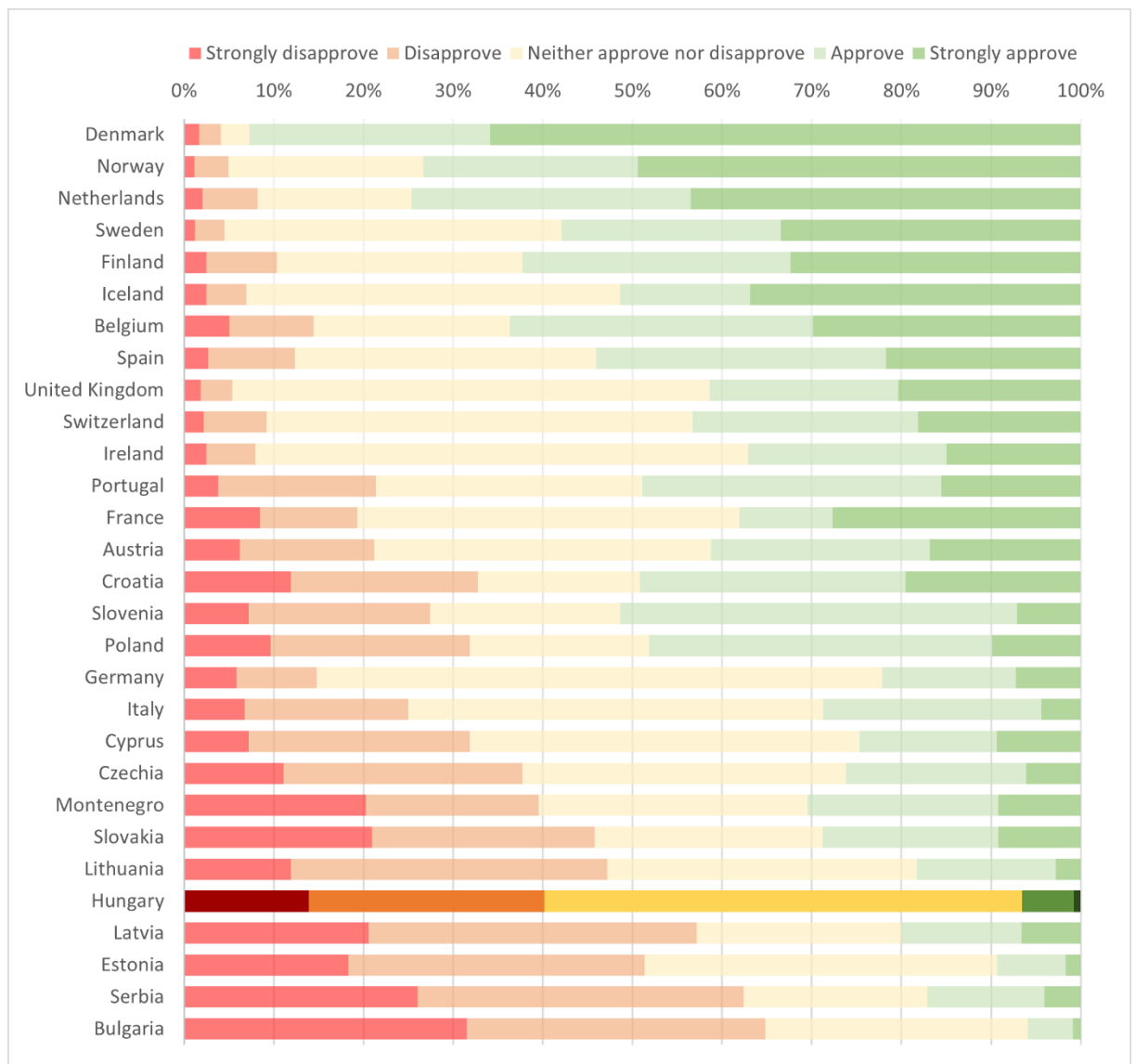
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## Appendix

**Figure 1. Approval of the choice of a person never to have children**



**Source:** ESS round 9 (2018): Timing of life, Justice and fairness. Rows are sorted by country mean scores to the survey question: “Using this card, how much do you approve or disapprove if a woman/man... chooses never to have children?”. The results are weighted by post-stratification weight including design weight. N=48550 (ESS ERIC, 2023).

**Table 9. The connection between climate change concerns and the ideal number of children for a family, in general, Czech Republic (unstandardized estimates and standard errors in parentheses from logistic regression models)**

	Model 1		Model 2	
Considers climate change to be the single most serious problem the world is facing	-0.069	(0.313)	0.148	(0.331)
Mentioned themselves as responsible for tackling climate change			-0.378	(0.336)
Has taken action to fight climate change over the past six months			-0.389	(0.257)
<b>Demographics</b>				
Gender: male (ref.: female)			0.231	(0.259)
Age			-0.069	(0.150)
Age squared			0.001	(0.002)
Highest level of education (ref.: low):				
medium			0.618	(0.530)
high			0.869	(0.656)
Type of settlement (ref.: rural area / village):				
small/middle town			0.037	(0.297)
large town			0.607#	(0.315)
Difficulty paying bills (ref.: most of the time):				
from time to time			-0.432	(0.371)
almost never / never			-0.881*	(0.385)
Has at least one child (ref.: childless)			-0.170	(0.322)
Constant	-1.298***	(0.127)	-0.075	(2.198)
N =		445		414

Notes. Model 1 includes only the main explanatory variable. Model 2 includes full set of controls.  
#p < 0.1; \*p < 0.05; \*\*p < 0.01; \*\*\*p < 0.001.

**Table 10. The connection between climate change concerns and the ideal number of children for a family, in general, Hungary (unstandardized estimates and standard errors in parentheses from logistic regression models)**

	Model 1		Model 2	
Considers climate change to be the single most serious problem the world is facing	0.598#	(0.308)	0.886**	(0.335)
Mentioned themselves as responsible for tackling climate change			-0.834	(0.637)
Has taken action to fight climate change over the past six months			-0.119	(0.288)
<b>Demographics</b>				
Gender: male (ref.: female)			-0.189	(0.296)
Age			0.156	(0.166)
Age squared			-0.002	(0.003)
Highest level of education (ref.: low):				
medium			-0.298	(0.324)
high			-0.63	(0.473)
Type of settlement (ref.: rural area / village):				
small/middle town			0.382	(0.38)
large town			0.856*	(0.365)
Difficulty paying bills (ref.: most of the time):				
from time to time			-0.414	(0.388)
almost never / never			-0.237	(0.407)
Has at least one child (ref.: childless)			-0.585#	(0.341)
Constant	-1.735***	(0.139)	-4.362#	(2.577)
N =	476		418	

Notes. Model 1 includes only the main explanatory variable. Model 2 includes full set of controls.  
#p < 0.1; \*p < 0.05; \*\*p < 0.01; \*\*\*p < 0.001.

**Table 11. The connection between climate change concerns and the ideal number of children for a family, in general, Poland (unstandardized estimates and standard errors in parentheses from logistic regression models)**

	Model 1		Model 2	
Considers climate change to be the single most serious problem the world is facing	-0.205	(0.369)	-0.180	(0.418)
Mentioned themselves as responsible for tackling climate change			0.019	(0.525)
Has taken action to fight climate change over the past six months			0.198	(0.346)
<b>Demographics</b>				
Gender: male (ref.: female)			-0.333	(0.36)
Age			0.230	(0.210)
Age squared			-0.003	(0.003)
Highest level of education (ref.: low):				
medium			-0.011	(0.596)
high			0.239	(0.686)
Type of settlement (ref.: rural area / village):				
small/middle town			-0.148	(0.399)
large town			0.004	(0.438)
Difficulty paying bills (ref.: most of the time):				
from time to time			0.082	(0.867)
almost never / never			-0.063	(0.848)
Has at least one child (ref.: childless)			-0.390	(0.430)
Constant	-1.826***	(0.164)	-5.323#	(3.228)
N =	401		346	

Notes. Model 1 includes only the main explanatory variable. Model 2 includes full set of controls.  
#p < 0.1; \*p < 0.05; \*\*p < 0.01; \*\*\*p < 0.001.

**Table 12. The connection between climate change concerns and the ideal number of children for a family, in general, Slovakia (unstandardized estimates and standard errors in parentheses from logistic regression models)**

	Model 1		Model 2	
Considers climate change to be the single most serious problem the world is facing	-0.970**	(0.365)	-1.124**	(0.419)
Mentioned themselves as responsible for tackling climate change			-0.423	(0.318)
Has taken action to fight climate change over the past six months			-0.255	(0.281)
<b>Demographics</b>				
Gender: male (ref.: female)			0.493#	(0.277)
Age			0.079	(0.163)
Age squared			-0.001	(0.003)
Highest level of education (ref.: low):				
medium			-0.183	(0.710)
high			-0.854	(0.804)
Type of settlement (ref.: rural area / village):				
small/middle town			0.36	(0.312)
large town			1.231***	(0.350)
Difficulty paying bills (ref.: most of the time):				
from time to time			-2.449***	(0.599)
almost never / never			-2.391***	(0.577)
Has at least one child (ref.: childless)			-0.693*	(0.352)
Constant	-1.348***	(0.124)	-0.359	(2.503)
N =	502		423	

Notes. Model 1 includes only the main explanatory variable. Model 2 includes full set of controls.  
#p < 0.1; \*p < 0.05; \*\*p < 0.01; \*\*\*p < 0.001.

**Table 13. The connection between climate change concerns and the ideal number of children personally, Czech Republic (unstandardized estimates and standard errors in parentheses from logistic regression models)**

	Model 1		Model 2	
Considers climate change to be the single most serious problem the world is facing	0.390	(0.291)	0.520#	(0.314)
Mentioned themselves as responsible for tackling climate change			-0.139	(0.312)
Has taken action to fight climate change over the past six months			-0.286	(0.253)
<b>Demographics</b>				
Gender: male (ref.: female)			0.324	(0.257)
Age			0.087	(0.152)
Age squared			-0.001	(0.002)
Highest level of education (ref.: low):				
medium			0.807	(0.591)
high			0.856	(0.695)
Type of settlement (ref.: rural area / village):				
small/middle town			0.025	(0.298)
large town			0.635*	(0.316)
Difficulty paying bills (ref.: most of the time):				
from time to time			-0.371	(0.39)
almost never / never			-0.525	(0.395)
Has at least one child (ref.: childless)			-0.709*	(0.320)
Constant	-1.391***	(0.127)	-2.755	(2.238)
N =	463		424	

Notes. Model 1 includes only the main explanatory variable. Model 2 includes full set of controls.  
#p < 0.1; \*p < 0.05; \*\*p < 0.01; \*\*\*p < 0.001.

**Table 14. The connection between climate change concerns and the ideal number of children personally, Hungary (unstandardized estimates and standard errors in parentheses from logistic regression models)**

	Model 1		Model 2	
Considers climate change to be the single most serious problem the world is facing	0.323	(0.316)	0.447	(0.350)
Mentioned themselves as responsible for tackling climate change			-2.389*	(1.094)
Has taken action to fight climate change over the past six months			0.143	(0.284)
<b>Demographics</b>				
Gender: male (ref.: female)			-0.504#	(0.293)
Age			-0.120	(0.149)
Age squared			0.003	(0.002)
Highest level of education (ref.: low):				
medium			-0.264	(0.318)
high			-0.325	(0.460)
Type of settlement (ref.: rural area / village):				
small/middle town			-0.325	(0.365)
large town			0.363	(0.342)
Difficulty paying bills (ref.: most of the time):				
from time to time			-0.478	(0.374)
almost never / never			-0.800*	(0.407)
Has at least one child (ref.: childless)			-1.619***	(0.341)
Constant	-1.592***	(0.134)	0.972	(2.232)
N =	466		408	

Notes. Model 1 includes only the main explanatory variable. Model 2 includes full set of controls.  
#p < 0.1; \*p < 0.05; \*\*p < 0.01; \*\*\*p < 0.001.

**Table 15. The connection between climate change concerns and the ideal number of children personally, Poland (unstandardized estimates and standard errors in parentheses from logistic regression models)**

	Model 1		Model 2	
Considers climate change to be the single most serious problem the world is facing	-0.627#	(0.374)	-0.703	(0.436)
Mentioned themselves as responsible for tackling climate change			-0.483	(0.552)
Has taken action to fight climate change over the past six months			0.497	(0.327)
<b>Demographics</b>				
Gender: male (ref.: female)			0.080	(0.339)
Age			0.331#	(0.196)
Age squared			-0.005	(0.003)
Highest level of education (ref.: low):				
medium			-0.393	(0.489)
high			-0.506	(0.605)
Type of settlement (ref.: rural area / village):				
small/middle town			0.311	(0.384)
large town			0.278	(0.421)
Difficulty paying bills (ref.: most of the time):				
from time to time			0.223	(0.788)
almost never / never			-0.086	(0.770)
Has at least one child (ref.: childless)			-1.192**	(0.407)
Constant	-1.482***	(0.145)	-6.304*	(2.986)
N =	400		338	

Notes. Model 1 includes only the main explanatory variable. Model 2 includes full set of controls.  
#p < 0.1; \*p < 0.05; \*\*p < 0.01; \*\*\*p < 0.001.

**Table 16. The connection between climate change concerns and the ideal number of children personally, Slovakia (unstandardized estimates and standard errors in parentheses from logistic regression models)**

	Model 1		Model 2	
Considers climate change to be the single most serious problem the world is facing	-0.579*	(0.294)	-0.748*	(0.345)
Mentioned themselves as responsible for tackling climate change			-0.875**	(0.330)
Has taken action to fight climate change over the past six months			-0.261	(0.266)
<b>Demographics</b>				
Gender: male (ref.: female)			0.278	(0.263)
Age			0.231	(0.157)
Age squared			-0.003	(0.002)
Highest level of education (ref.: low):				
medium			0.185	(0.677)
high			-0.754	(0.767)
Type of settlement (ref.: rural area / village):				
small/middle town			0.177	(0.293)
large town			1.236***	(0.345)
Difficulty paying bills (ref.: most of the time):				
from time to time			-2.043***	(0.576)
almost never / never			-2.487***	(0.565)
Has at least one child (ref.: childless)			-1.600***	(0.341)
Constant	-1.183***	(0.119)	-2.434	(2.397)
N =	503		415	

Notes. Model 1 includes only the main explanatory variable. Model 2 includes full set of controls.  
#p < 0.1; \*p < 0.05; \*\*p < 0.01; \*\*\*p < 0.001.