



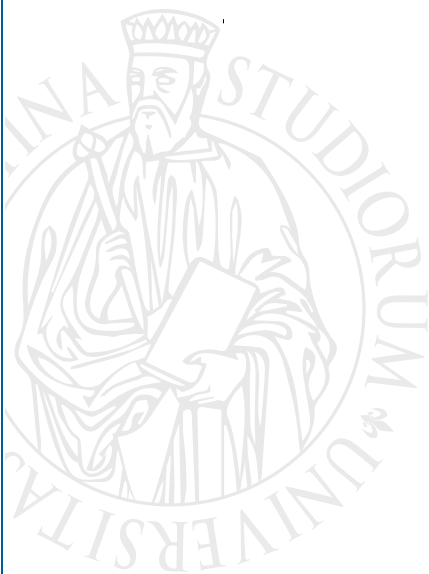
UNIVERSITÀ
DEGLI STUDI
FIRENZE

DISIA

DIPARTIMENTO DI STATISTICA,
INFORMATICA, APPLICAZIONI
"GIUSEPPE PARENTI"

**Narratives of the future shape fertility
in uncertain times.
Evidence from the COVID-19 pandemic.**

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**DISIA WORKING PAPER
2020/11**

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Narratives of the future shape fertility in uncertain times.

Evidence from the COVID-19 pandemic.

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Abstract

The sociological and demographic literatures have widely demonstrated that fertility decisions are shaped by individuals' previous life experiences and socioeconomic status – the “shadow of the past”. However, rising uncertainty in contemporary societies necessitates an analytical framework that acknowledges the influence of the future in the fertility decision-making process. Based on the Narrative Framework, we argue that personal narratives of the future, and their constitutive elements of expectations and imaginaries – the “shadow of the future” – represent crucial drivers of fertility intentions under conditions of uncertainty. Our arguments are tested empirically by exploiting the exogenous uncertainty shock provided by the COVID-19 pandemic, and unique data we collected during the Italian lockdown. Results suggest that, because of COVID-induced uncertainty, subjective perceptions and personal narratives of the future – also shaped by media shared narratives – gain the upper hand over the shadow of the past in influencing fertility intentions. In addition, we provide evidence of a causal impact of shared narratives of the future on fertility intentions through an online experiment simulating a “real” exposition of the respondents to a new media narrative on the expected length of the emergency.

Acknowledgment

This work was supported by the Italian Ministry of University and Research under the FARE grant ‘Narratives’ (PI: Daniele Vignoli), see: <https://sites.google.com/unifi.it/narratives/home>

Uncertainty – a condition with unknown probability distributions of future outcomes – represents an intrinsic characteristic of contemporary societies. The ideas of “risk society”, “reflexive modernity”, and “liquid modernity” describe a historical trend of the last decades where uncertainty is a new tenant of social change (Giddens 1991; Beck 1992; Bauman 2000). Already more than a century ago Karl Marx designated modernity itself as a novel era in which “all that is solid melts into air” ([1848] (2000):475), but recent globalization trends have expanded the sources of uncertainty. The increasing speed of technological change, the constant flows of financial capitals across the globe, labor market reforms, and, more recently, climate change and its social consequences have resulted in a globalization of uncertainty (Zinn 2008). These conditions of uncertainty affect private lives (Sennet 1998) and family life courses (Kreyenfeld et al. 2012; Mills and Blossfeld 2013). Embedded in such a contemporary scenario, the COVID-19 pandemic of 2020, and its outbreak responses, escalated uncertainty at the core of public debate and personal lives. Policy makers, but also scientists, have no clear answers on how the virus is spreading, how long the pandemic will last, and what the real consequences will be for public health as well as other social and economic outcomes. Especially in countries that implemented a nationwide lockdown, people started to feel insecure over their daily life due to the risk of contagion, which also depends on others’ “safe” behavior. The possibility of losing one’s job and/or reducing the standard of living is a widespread renewed source of concern, due to an economic future that nobody can forecast, even in the short-term. This additional condition of uncertainty can be seen as an ancillary outcome of globalization: the rapid diffusion of a pandemic is also related to the high level of exchanges and global interdependencies (Kaufmann 2009). During the pandemic, the (social) media played a major role in spreading feelings of uncertainty about the future, due to a constant (over-)flow of information on contagions, deaths, and failures in the health system. Media narratives contributed to further increase individuals’ feelings of economic uncertainty (Altig et al. 2020).

On this backdrop, while media reports speculate about an upsurge in “Corona-babies” conceived during the pandemic and its related lockdowns, it seems plausible to expect an additional

negative impact on family formation due to the increasing uncertainties about the future, at least in high-income countries (Aassve et al. 2020). In this article, we explore the consequences that the rising uncertainty induced by the COVID-19 pandemic may have for fertility intentions. The latter reflect the combined effect of desired fertility and situational constraints (Thomson and Brandreth 1995; Billari, Philipov, and Testa 2009) and have been generally regarded as a fairly suitable predictor of behavior, provided that a time frame for their realization is set (Westoff and Ryder 1977; Schoen et al. 1999).

The pandemic occurred within a context of demographic change where fertility rates in many countries in Europe and the US had declined during much of the 2010s. The underlying nature of such decline is still a conundrum for demographers and sociologists. Fertility declined dramatically both in already low-fertility countries of Southern Europe that were severely hit by the economic and social consequences of the Great Recession, and in Nordic countries such as Norway and Finland, that experienced an almost immediate recovery of economic growth and where the institutional context continued to provide a more favorable environment for childbearing. There have been several empirical attempts to understand the reasons underlying the fertility decline after 2008, but even studies simultaneously including several indicators of the economic conjuncture, such as the unemployment rate, foreclosure rates, and the cost of public debt, were not able to fully explain the relatively homogeneous fertility contraction that Western societies are currently facing (e.g., Goldstein et al. 2013; Schneider 2015; Comolli 2017; Matysiak, Sobotka, and Vignoli 2020). This is because, we posit here, objective indicators of individuals' employment and economic conditions subsume the "statistical shadow of the past" (Davidson 2010:17), which tells us little about the uncertain future that people experience during the crisis. We argue that to study fertility decisions in uncertain times we need to change perspective, recognizing that uncertainty is a forward-looking notion.

The understanding of the effects of uncertainty on the fertility decision-making process requires a theoretical framework where the role of the future is critical. The study of the influence of the future in the decision-making processes has a long tradition in the social sciences, with a renewed interest in recent years. We rely on the Narrative Framework for the analysis of fertility intentions (Vignoli et al.

2020a, 2020b), which is based on recent developments from economic sociology on decision-making under conditions of fundamental uncertainty (Beckert 2016; Beckert and Bronk 2018). In a condition in which the effects of present actions cannot be forecast or estimated with any confidence, actors are influenced in their choices not only by past experiences and objective constraints, but also by their *expectations* about future states of the world and consequences of a given action. In addition, social actors have the ability to deviate from the expected course of action, thanks to their *imaginative* capacity, and try to reach a wishful imagined future regardless of structural constraints, and notwithstanding possible adverse economic expectations. Objective constraints, expectations and imaginaries are synthesized in a *personal narrative of future*, which guides individuals' fertility decision-making process. This future-oriented framework represents a novelty in the study of fertility decision-making processes, and finds a natural application to the analysis of the consequences of the COVID-19 emergency. The pandemic, and the related lockdown, represents indeed a clear situation of suspension of the ordinary temporal orientation: the degree of "clarity" with which the future is imagined is reduced, as well as the future horizon is "contracting" because forecasting is more difficult than before (Mische 2009:700). During the pandemic the expected future is shaped by individuals' direct exposure to the SARS-CoV-2 virus – i.e. by own or close relatives' contagion and subsequent social isolation, hospitalization, or even death – and the economic consequences of the pandemic – e.g. job loss or temporary inactivity due to lockdown. However, for the majority of the population who does not experience the health and economic consequences of the pandemic, expectations are shaped by the spread of *shared narratives* of an uncertain future (Vignoli et al. 2020b), especially those channeled by the media and related to the virus diffusion, government restrictions, and the controversial scientific debate on the conclusion of the pandemic.

In Italy, our case study, the COVID-19 disaster has created an enormous uncertainty shock, and thus provides a unique occasion to test empirically the influence of the "shadow of the future" on fertility intentions under conditions of uncertainty. The country has been affected more strongly by the 2008 recession and by the public debt crisis than many other industrialized countries in the World. In

2019, the country came back into a *lowest-low* fertility regime with a total fertility of 1.29, the lowest in Europe, down from 1.46 in 2010. On top of that, the country has been the first to be severely hit by the COVID-19 pandemic in the Western world, and Italians faced the longest complete and nationwide lockdown experience, which started on the 9th of March and ended on the 4th of May 2020. At the time of writing (September 2020), the number of official deaths rose to almost 36,000, with approximately 300,000 individuals tested positive for the virus. Because of COVID-induced uncertainty, subjective perceptions and personal narratives of the future – also influenced by media shared narratives – may gain the upper hand over the “shadow of the past” for fertility intentions. What has happened to childbearing plans during this unexpected source of uncertainty about the future? Are fertility intentions discouraged by the pandemic? Can its impact be explained by the objective exposure to the virus and its related socioeconomic consequences, or is it better grasped by rising uncertainty about the future, also spread by the media?

To address these questions, we make use of unique data that we collected during the lockdown period on a sample of Italians in their reproductive ages. We measured individuals’ expectations concerning the duration of the pandemic emergency and family imaginaries, contrasting their effects on fertility intentions during the lockdown with those of past experiences and the objective exposure to the pandemic and its socioeconomic consequences. In addition, we provide empirical evidence of a causal impact of shared narratives of the future on fertility intentions by making use of online experimentation, an innovation for the study of the impact of the future in the decision-making processes. Our experiment simulates a “real” exposition of respondents to a new media narrative. Respondents were randomly assigned to different mock news bulletins concerning the expected end of the pandemic emergency in Italy, each presenting a different expected duration before the return to normality, and we then compared their post-treatment and pre-treatment fertility intentions.

In the following, we outline the theoretical foundation of the paper, the Narrative Framework, which is then adapted for the study of the consequences of the COVID-19 pandemic. We continue by describing our data, methods, and results. The paper ends with a concluding discussion.

Uncertainty and Fertility: The Narrative Framework

Much of the literature on fertility is based on the study of the social determinants of fertility, which mainly accounts for the influence of what already happened in previous stages of the life course, considering factors such as educational attainment, previous (un)employment episodes, and partnership histories (Kreyenfeld et al. 2012; Barbieri et al. 2015; Busetta et al. 2019; Vignoli et al. 2012, 2019). These experiences are shaped during socialization and by personal predispositions, like risk aversion or time discounting preferences, that may also exert a direct influence on fertility choices (Schmidt 2008; Arpino and Bellani 2018; Bellani et al. 2020). Personality traits, cumulative past experiences over the life course and the present socioeconomic status are the standard elements usually identified as determinants of fertility intentions and behaviors, and are aspects that need to be controlled for in any empirical model of fertility intentions. This “driven-by-the-past framework” (Seligman et al. 2013:127), however, makes agency and choice difficult to understand, as the fertility decision-making process is a complex process influenced, but not determined, by past experiences.

A few theoretical perspectives tried to consider the influence of the future in the fertility decision-making process. The New Home Economics (Becker 1964; 1981), for example, frames it as a rational evaluation of future expected utility from having children, with people considering the trade-off between working and having children. However, the model assumes a form of individual agency (*Homo oeconomicus*) in which partners are able to *calculate* and *discount* the future costs and benefits of a child; that is, uncertainty is ruled out by assumption. Cognitive schemas and expectations have been mobilized to account for the influence of the future in fertility decision-making by the Theory of Planned Behavior (Ajzen 1991; Koblas and Ajzen 2013) and the Traits-Desires- Intentions-Behavior approach (Miller 1994; 2011). The future considered by these two socio-psychological approaches seems, however, always pre-determined by a static set of elements, leaving only limited space for uncertainty and human agency. The deliberative process of fertility decision, indeed, emerges in a condition of uncertainty where the imaginative capacity may play a crucial role in the shift from what can be expected from past experiences, personality traits or social norms.

The influence of the future in the course of action is difficult to be conceptualized and operationalized in empirical research. While past events leave “traces” that the researcher can observe in the present – at least in memories – the future is, by definition, yet to come; but its “shadow” can be found in, and influence, the course of action. The pragmatist philosophical tradition devoted special attention to the role of the future in the course of action, and provides insights for its conceptualization. Following this approach, future expectations are not just determined by the *habitus* (Bourdieu 1990), pre-existing cognitive schemas or typification (Schütz 1962), but are deeply imbued of imaginative capacity (Dewey [1930] 1922; Mead [2002] 1932). Of course, not all human actions imply deliberative thinking. For Dewey, the ordinary course of action is an unreflective flow of activities in which “habits do all the perceiving, recalling, judging, conceiving and reasoning that is done” ([1930] 1922:177). However, the ordinary, unconscious course of action can be interrupted by the emergence of conflict between “different habits, or by the release of impulses”, or when the actor is confronted with a “new and surprising situation” (Beckert 2016:54) where the expected outcome of the ordinary routine does not seem to apply anymore. At this point, people experience uncertainty about the future and the deliberative process emerges, as the situation requires a (new) judgment. In a situation of uncertainty, past experiences and expectations come into play in an imaginative “dialogue” considering “competing possible lines of action”, because “deliberation is an experiment in finding out what the various lines of possible action are really like” (Dewey 1930 [1922]:190). The Narrative Framework identifies the key elements that are involved in this future-oriented deliberative process: Expectations, imaginaries, and personal narratives of the future, which define what can be referred to as the “shadow of the future” (Bernardi, Huinink, and Settersten 2019:4) that influences the decision-making process.

[Figure 1 near here]

Figure 1 presents our Narrative Framework, that in the next section will be adapted for the empirical analysis of the consequences of the COVID-19 pandemic for fertility intentions. The figure

represents the different steps of a stylized decision-making process. Each element of the framework stems from the previous ones, but can also exceed them and have an independent effect on fertility decision-making. Although these elements are not meant to follow any strict order in actual decision-making, from an analytical point of view it is useful to start considering personality traits, past experiences (B) and current (socioeconomic) status (C), which provide a set of opportunities and constraints for childbearing plans. As mentioned, these factors are part of the so called “shadow of the past” that influences the decision-making process and represents the focus of the vast majority of socio-demographic studies. A recent stream of literature introduced *personal perceptions* (D) of past and current experiences as a way to introduce agency in empirical models of fertility intentions and behavior, and account for the fact that people may react very differently to the same objective experiences and economic condition (Kreyenfeld 2010; 2015). Typical operationalizations include, for example, feelings of insecurity about current job or financial situation, as well as measures of overall subjective well-being such as life satisfaction (Mencarini et al. 2018) or happiness (Billari 2009). Individuals’ perceptions have been found to play an independent role net of objective indicators of individuals’ past and current labor market situation (e.g. Bhaumik and Nugent 2011; Fahlén and Oláh 2018), and to moderate their impact on fertility intentions (Vignoli, Mencarini, and Alderotti 2020) and behavior (Kreyenfeld 2015). Perceptions of insecurity, although related to individuals’ current situation, obviously refer to possible future events or threats. However, individuals’ subjective evaluations of the (in)security of their current condition only implicitly entail a reference to the future. In this sense, perceptions are somewhat “in between” the shadow of the past and the shadow of the future. To address theoretically and empirically the role of uncertainty for fertility decisions, a conceptualization explicitly acknowledging its *forward-looking nature* is needed.

In Figure 1, *expectations* (E) are the first step into the shadow of the future, as they represent what people expect will happen in the future based on the available information. According to Bourdieu (1990), expectations stem from the past, as they are shaped by an individuals’ habitus acquired during socialization. This influence of the shadow of the past on expectations is evident in the research on the

social stratification of youth occupational aspirations: personal expectations over the future life course are influenced by the family of origin, and thus represent a mechanism in the process of reproduction of social inequalities (Morgan 2007). Although expectations may arise from past experiences, they are often connected to a shadow of the future and, thus, become an independent source of agency. For instance, working with a fixed-term contract may not negatively affect fertility intentions in light of an expected strong economic growth or increase in permanent employment opportunities.

Expectations, however, do not exhaust the whole influence of the future in the course of action, as *imaginaries* (F) may shape and deviate from an expected future. Imagination is the capacity to place oneself in one or more imagined situations, also hypothesizing alternative courses of action and their effects. But imagination, more radically, also allows to imagine a possible future that cannot be deducted from the present. Imaginaries free people from the constraints of the present situation enabling them to experience a condition of non-involvement (Ricoeur 1991), a form of “distance experience” that allows people to distance themselves from the reality of the “contact experience” (Dewey 1930:58; Mische 2009:697). Personal imaginaries may be easily influenced by social norms and relevant others’ opinions, but they may not coincide with them and contribute to orient the decision-making process in a different direction. Imaginaries constitute, thus, a less abstract reference than social norms because they represent wishful (or fearful) projections into the future, resulting from the human agency’s capacity to shift from the expected course of action (Emirbayer and Mische 1999)¹. Imaginaries may play a crucial role especially in case of decisions that imply complex and long-term outcomes, as in the case of fertility decisions. In these situations, people experience a condition of uncertainty over the real outcomes of their decision and choosing between different options is often difficult: Long-term outcomes cannot be forecast and/or each possible future may involve both positive and negative expectations. A normative orientation related to personal imaginaries (“How I would (not) like the future to be”) may come into play and orient deliberation, shedding a special light on the different pros and cons implied by the available options, thus contributing to orient the decision. A psychological mechanism compatible with the importance of imaginaries can be found in the “affective

forecasting theory”, according to which people base their decisions on affective forecasts, i.e. their predictions about their own emotional reactions to future events (Wilson and Gilbert 2003). Demographic research has shown that the happiness of parents-to-be increases before childbirth (Myrskylä and Margolis 2014), in line with the idea that the perception of an increase (or a decrease) in one’s own happiness from having a(nother) child may influence the fertility decision (Billari 2009). In our framework, family imaginaries represent the source of the “expected happiness” from childbearing and, thus, have a dual effect on the cognitive process of deliberation. First, they provide a frame under which the current status (C) and its perception (D) are interpreted and evaluated that cannot be reduced to expectations – e.g., whether rising unemployment and possible job loss is an issue for childbearing plans. Second, they represent an independent source of a conscious desire for a change in the future, i.e., they may provide a life goal, irrespective of the shadow of the past and (more or less plausible) expectations.

Personal narratives of the future (G), the final step in our Narrative Framework, reflect the contingent plan for reaching the goals set by the imaginaries. As Figure 1 suggests, narratives do not just add an additional element in the framework; rather, they represent the less abstract level of the decision-making process, where the shadow of the past, expectations and imaginaries find their proper place and, at this level, influence fertility intentions (Vignoli et al. 2020a). All previous elements in the framework are selected, interpreted, and included in a personal narrative of the future which also entails a hypothetical course of actions and their causal interconnection.

We argue that social action in a condition of uncertainty about the future cannot take place without more or less conscious expectations about future states of the world; but, in the case of life-course decisions like fertility, they necessarily involve a conscious narrative of the future, which embodies the causal path that people deem necessary to reach their imagined goal. In a condition of uncertainty about the future, narratives “transform uncertainty into a fictitious certainty contributing to decision-making” (Beckert 2016:242). Narratives of the future might facilitate or inhibit fertility in conditions of uncertainty. They might foster fertility in line with the socio-psychological uncertainty

reduction framework from Friedman et al. (1994), who argued that more economically vulnerable women may respond to uncertain life prospects by choosing to become a mother, which gives meaning and stability to their lives. However, empirical evidence suggests that most often people, especially the young, build their personal narratives to act in accordance with a condition of economic uncertainty, postponing long-term binding decisions such as marriage and childbearing (Mills and Blossfeld 2013). Also, a family imaginary may revolve around the desire to remain childless, so that all previous elements of the Narrative Framework only play a marginal role in defining the personal narrative influencing fertility decisions.

Individual actors are not the only “authors” of their own narratives of the future, as they are influenced by factors external to them, in the form of *context and shared narratives* (A). The “context” usually considered in comparative analyses of fertility is related to both the institutional setting – educational systems, labor market regulations, and the wider system of social and family policies – and cultural factors – prevailing values and long-term cultural continuities (Balbo, Billari, and Mills 2013). However, beyond and above the influence of these contextual factors, a last element of our Narrative Framework is represented by *shared narratives* (A), i.e. narratives of the future adopted by relevant others such as parents and peers, or conveyed by the media (Vignoli et al. 2020b). A major source of influence in globalized societies is the unprecedented access to press and new (social) media, which may shape individuals’ perceptions, expectations, and imaginaries.

Media-channeled shared narratives have started to play a major role in spreading feelings of uncertainty about the future in the last decades, and the media coverage of economic issues has increased substantially especially after the 2008 crisis, both in Europe and the US (Baker et al. 2016). This constant (over-)flow of information, which received a boost after the pandemic outbreak (Altig et al. 2020), is likely to increase individuals’ feelings of uncertainty about the future because of the prevailing tone and angles of media contents. In fact, not only negative messages, such as drops in economic performance, systematically receive more coverage, but they also have stronger negative impacts on feelings of uncertainty than positive reports (Alsem et al. 2008; Dräger 2015). Schneider

(2015) suggested that press coverage comes closer to measuring the sentiments that shape economic uncertainty and that affect fertility decisions than actual economic constraints. More recently, the European sovereign debt crisis has received much attention in the media, and their simplified narratives served as a multiplier of uncertainty, contributing to shrinking birth rates (Comolli and Vignoli 2020).

Adapting the Narrative Framework to the COVID-19 Pandemic

In this paper, we propose an adaptation of the outlined Narrative Framework to the study of fertility intentions during the COVID-19 pandemic outbreak, represented graphically in Figure 2. The scheme has been developed and is discussed here based on the Italian case, but may be applied to any country that faced the COVID-19 pandemic followed by a complete lockdown. Two sets of hypotheses refer to the “shadow of the past” of COVID-induced uncertainty (hypotheses H1a, H1b) and to the “shadow of the future” of pandemic uncertainty and personal family imaginaries (hypotheses H4a, H4b). Given their liminal positioning at the intersection between the two “shadows” (Figure 1), a specific hypothesis (H3) refers to the role of perceptions related to the personal and general situations. Also, we take into account the role of media shared narratives during the pandemic (hypothesis H2), and a last hypothesis (H5) concerns their possible *causal* impact, that will be investigated through an *ad hoc* experiment.

[Figure 2 near here]

As shown in Figure 2, regardless of their prior childbearing intentions (I_1), the pandemic outbreak exogenously exposed people in their reproductive ages to a new environment characterized by a high level of uncertainty (A_1), given their past experiences and personality traits (B). This new uncertain situation affects individuals through two main mechanisms: on the one hand, the health and economic consequences of the pandemic and related government restrictions (*Context*), on the other hand the exposure to the (social) media coverage of the pandemic (*Shared narratives*).

Following the steps of the Narrative Framework, the pandemic context implied important changes in individuals' objective status (*C* in Figure 2), first and foremost in terms of health consequences due to the direct exposure to the SARS-CoV-2 virus. Apart from those who needed hospitalization because of more severe symptoms, individuals who tested positive for the virus had to face quarantine and social isolation, and even many untested people were put in quarantine because of suspected contagion. The same holds also for those whose close relatives or acquaintances got infected. This unexpected situation is likely to hinder childbearing plans, also indirectly due to induced perceptions of insecurity (*D* in Figure 2), which leads to our first hypothesis:

Hypothesis 1a: Personal, close relatives' or acquaintances' exposure to the SARS-CoV-2 virus is associated to a reduction of pre-pandemic fertility intentions.

Even more widespread have been the economic consequences of the pandemic. During the lockdown, which started on the 9th of March 2020, Italians were prohibited to leave their homes except for work activities deemed as “essential”, buying food or in case of utter emergency. The most fortunate workers – usually highly-educated individuals, employed in skilled jobs and in regular forms of dependent employment – shifted to home or smart work without risks of losing their job or suffering from earning losses, especially if public sector employees. However, the Italian National Institute of Statistics (ISTAT) estimated that approximately one third of the total labor force was employed in economic sectors whose activities were suspended, especially in the private sector, where almost half of the firms were hit by government restrictions (ISTAT 2020). This implied that millions of suspended employees had to rely on wage guarantee funds, which entail a 35% average reduction of the usual salary, whereas many self-employed, especially in the consumer services sector, had to temporarily interrupt their activities with limited or no earnings, apart from discretionary lump-sum transfers set apart by the Government to face the emergency. Finally, many workers, although more difficult to

quantify, especially among those employed with temporary contracts or in the black economy, lost their job. Restrictions were gradually loosened by the government up to the end of the lockdown on the 4th of May 2020. Many activities, e.g. bars and restaurants, only re-opened at the beginning of June, and mobility between Italian regions (NUTS-2), without any certified urgent reason, was only allowed as of the 3rd of June 2020. This objective situation of economic uncertainty leads to the next hypothesis:

Hypothesis 1b: Workers whose activities were suspended and/or lost their job because of government restrictions are more likely to reduce their pre-pandemic fertility intentions.

The new context set by the pandemic and government restrictions influenced many aspects of individuals' objective status, which, together with past experiences and personality traits, is part of the "shadow of the past" in the fertility decision-making process during the COVID-19 pandemic. The pandemic context, however, also influenced more subjective states through the exposure to media shared narratives. During the lockdown, in fact, much of the population was forced at home and informed about the pandemic diffusion and government decisions only by the (social) media, for which trends in Coronavirus diffusion were a major topic of interest (Baker et al. 2020). In this period, every day, at 6 p.m., Italians gathered in front of their TVs to get the official updates concerning the daily number of hospitalized and deaths, from the Civil Protection's press conference. The daily Coronavirus bulletin of deaths and contagions was a major source of concern for the population in such period. In the first half of April 2020, at the peak of the pandemic and in the middle of the lockdown period, Italy recorded an average of 700 daily "COVID-related" deaths, with already approximately 150,000 positive cases and 20,000 official deaths by the 15th of April, the highest numbers by far in Europe at that time. It should be said that these figures are largely incomparable across countries, and are exposed to different kind of biases in the identification of the exact cause of death (Odone et al. 2020)². But the

awareness of these official numbers is likely to have shaped individuals' perceptions of the seriousness of the emergency, and to have induced generalized feelings of insecurity across several life domains. Thus, the media coverage of the pandemic (part of A_I in Figure 2) is deemed to have played a crucial role for changes in fertility intentions due to the pandemic, and its effects should be mediated by individuals' perceptions of insecurity (D), and expectations concerning the evolution of the emergency (E). This brings to our next hypothesis:

Hypothesis 2: A high exposure to the media (TV and internet) during the lockdown is associated to a reduction of pre-pandemic fertility intentions.

The combination of the health and economic consequences of the pandemic, together with its media narratives, fueled feelings of insecurity across several life domains even among those not directly exposed to the objective socioeconomic consequences of the pandemic. This leads to our next hypothesis:

Hypothesis 3: Perceptions of insecurity across several life domains due to the pandemic are associated to a reduction of pre-pandemic fertility intentions.

Public media discourse in Italy was filled with heated debates among virologists, politicians, and opinion-leaders on issues such as “the exponential growth of the contagions”, the need for “measures to flatten the curve”, and whether (and which type of) masks are useful to slow down the pandemic, often with contradictory messages (Ruiu 2020). In line with our Narrative Framework, people were thus exposed to a high degree of uncertainty about their future, and had to form their own expectations about the return to pre-pandemic conditions (E in Figure 2). Expectations are the first element of the shadow of the future influencing fertility intentions during the pandemic:

Hypothesis 4a: An expected long period before the return to pre-pandemic conditions is associated to a reduction of pre-pandemic fertility intentions.

Taken together, current status (*C*), perceptions (*D*) and expectations about the length of the emergency (*E*), all influenced by the new uncertain context provided by the pandemic and the related media shared narratives (*A₁*), are meant to influence fertility intentions during the pandemic (*I₂*), net of past experiences and personality traits (*B*). Personal family imaginaries related to the joy of parenthood, measured through the anticipated happiness deriving from an (additional) childbirth (*F*), are also deemed to influence changes in fertility intentions during the pandemic, but have been included in Figure 2 outside the influence of the pandemic context and shared narratives: Family imaginaries are deemed to have been only marginally affected by the pandemic, at least in the short run. Imaginaries do change during the life-cycle, but since they usually incorporate a normative orientation toward the future, they are not likely to be modified in the short-term (Kiley and Vaisey 2020). The presence of family imaginaries and their influence on fertility intentions leads to our next hypothesis:

Hypothesis 4b: Individuals with a positive family imaginary are less negatively influenced by the pandemic and are more likely to hold their pre-pandemic childbearing plans.

For people not directly exposed to the health and economic consequences of the pandemic, the shared narratives spread by the media were the major source of uncertainty. However, to effectively grasp media effects, indicators of the media coverage of the pandemic, combined with measures of individuals' exposure to those specific media contents, are needed. And, even if all the necessary information were available, causality would remain difficult to ascertain. For these reasons, we adopted an experimental approach, in which respondents were exposed to different scenarios regarding the

expected end of the pandemic, mimicking a news report, what we define as a “new shared narrative of the future” (A_2 in Figure 2). We then asked the respondents about their (renewed) fertility intentions (I_3), in light of the expected duration of the emergency. In this way, we both provide additional evidence on the importance of media shared narratives, as well as reinforce the claims about the causal role of the shadow of the future for fertility intentions. The treatment also allows to evaluate how family imaginaries moderate the influence of shared narratives concerning pandemic duration: positive family imaginaries should support an increase in fertility intentions in light of a short expected return to the pre-pandemic condition. This experiment allows us to test our last hypothesis:

Hypothesis 5: Exposure to a new shared narrative of a long wait before the return to pre-pandemic conditions is associated to a reduction of fertility intentions; on the contrary, an expected short wait before the return to pre-pandemic conditions is associated to an increase in fertility intentions, especially if coupled with a positive family imaginary.

To sum up, if fertility decisions have been discouraged by the pandemic, we hypothesize that such impact cannot just be explained by the objective exposure to its health and economic consequences (hypotheses H1a and H1b). In a context of amplified uncertainty about the future, media exposure (hypothesis H2), perceptions (hypotheses H3) and, especially, expectations and imaginaries may gain the upper hand (hypotheses H4a and H4b). The expected length of the pandemic spread by the media, simulated through our experiment, may also have a specific influence on fertility intentions (hypothesis H5).

Figure 2 serves as a “mediator” between our Narrative Framework and the empirical analysis of changes in fertility intentions during the pandemic, carried out by means of survey data that we collected during the lockdown in Italy. These data operationalize all the elements included in the scheme, including the uncertain shock of the pandemic, and, thus, allow to test empirically our

hypotheses. The scheme does not include personal narratives of the future, which are more easily explored through qualitative interviewing. However, if relevant information regarding all the elements involved is available in survey data, it may be used as a proxy to grasp the effects of personal narratives (Vignoli et al. 2020b).

Data, variables and methods

Sampling and data collection

The data come from an online survey carried out between the 25th of April and the 1st of May 2020, that is during the final week of the Italian lockdown. A well-known issue of online sampling is that of coverage bias, which may undermine its capability to represent the target population. In fact, online surveys can only reach those who are online, agreed to become part of a panel, and to participate in the specific survey (Duffy et al. 2005). These limitations notwithstanding, we had no real alternative to the adoption of this method of data collection. Given our aim to exploit the lockdown as an exogenous uncertainty shock, we needed to collect all the relevant information, for a reasonably large sample size, in a very short time period. Face-to-face interviewing was, of course, not an option during the lockdown.

That being said, the sampling was carried out by the international survey company Lucid, which has a strong academic reputation for its high-quality and rigorous data collection (Coppock and McClellan, 2019), and we followed several strategies to ensure both data representativeness and quality.

First, given our focus on fertility intentions, we targeted Italian men and women aged 20-43 and 20-41, respectively, regardless of their living arrangements and partnership status, an age group with an incidence of regular internet use close to 90% (ISTAT 2018). Second, based on data from ISTAT, we had set quotas proportional to gender, age, and area of residence. Given the heterogeneous impact of COVID-19 across Italian areas – Northern regions have been more severely hit by the

pandemic in terms of number of contagions and official deaths – we set quotas for provinces (NUTS-3) in the Northern part of Italy (including the Marche region) and regions (NUTS-2) in the Central and Southern part of the country (including Sicily and Sardinia). Third, respondents who provided deliberately fatuous answers had their answers filtered out. We also discarded interviews that were shorter than three minutes – the average duration of the interview in the final sample is approximately eight minutes. After eliminating few cases who were expecting a child, in January and/or at the interview date, the final sample consists of 3,934 individuals.

Variables

Among sociodemographic factors related to past experiences and personality traits (B), we collected respondents' risk aversion (“do you feel inclined to take risks or rather to avoid them?”), number of siblings, living arrangement (marital status and, if not married, whether he/she had a partner at interview), number of children, and educational attainment. These are standard predictors of fertility intentions, largely unaffected by the pandemic context – at least in the short term. Descriptive statistics for all variables are shown in Table 1.

When it comes to the shadow-of-the-past elements of the Narrative Framework that have been affected by the exogenous uncertainty shock of the pandemic, we asked about the exposure, either direct or indirect, to SARS-CoV-2, and changes in socio-economic status (Status, C). Whereas the majority of the respondents in our sample reported no personal exposure (60%), 5% were either tested positive for the virus or have been put in isolation due to suspected infection, 24% reported having a close relative or acquaintance who has been tested positive, and 10% reported having a close relative or acquaintance who has been put in isolation due to suspected infection. To grasp respondents' socioeconomic status, we asked them several questions referring both to their pre-pandemic (January) and current condition: Employment status (employed, not employed, student); for the employed, the level of qualification of the occupation (high or low, the former including managerial, professional and technical occupations) and the professional status (employee or self-employed); for the employees, the

presence and type of job contract (permanent, temporary, irregular work). We collapsed all the pre-pandemic information in a “labor market status” variable. To measure more directly the impact of the lockdown and government restrictions, we compared pre-pandemic and current information, and created three binary variables concerning changes in employment status – all other dimensions of the labor market status are less likely to be influenced by the new pandemic context, at least in the short term. As shown in Table 1, 8% of those who were working or students in January became not employed at the time of the interview. In addition, 13% of those who were employed in January declared to be temporarily inactive, whereas 21% declared they had shifted to smart work. Finally, we measured respondents’ net monthly household income at the time of the interview. We asked the respondent to choose between 13 categories, subsequently recoded as a continuous variable ranging from 300€ to 5,000€. The average in our sample is close to 2,000€ (median of 1,800€), with a substantial number of missing values (17%) which have been imputed with the median value (missing values are concentrated among students and not employed). According to ISTAT, in 2017 the median net monthly household income in Italy was approximately 2,100€. Considering the negative impact of the lockdown, our sample average is thus in line with the “true” population value, notwithstanding the high number of missing values.

Whereas objective status is influenced by the pandemic health and socio-economic consequences and government restrictions, perceptions (D) and shadow-of-the-future elements are likely to be influenced by media shared narratives (A1) as well. To grasp their effects, we asked respondents about the daily time spent watching TV and surfing the internet to get information about politics and latest news. To isolate possible changes during the lockdown, we measured media exposure in January and at the time of the interview. Whereas respondents used to spend one hour watching TV and surfing the internet on an average day of January, their use of both media increased of approximately 40 minutes per day during the lockdown.

For perceptions, we measured respondents’ feelings of insecurity due to their work, health, the diffusion of the pandemic, the general economic and political situations, on a scale from 0 to 10.

Respondents, on average, are not too worried about their health status (3.95), but they show a considerable amount of insecurity because of the pandemic (6.87), possibly also because of its negative consequences on their work (5.90), and on the general economic (6.39) and political (6.89) situations.

For the shadow of the future, the role of pandemic uncertainty on expectations (E) was measured through two questions regarding the expected duration before the return to the pre-pandemic condition, with respect to respondents' own situation and the country's social and economic situation. Respondents are much more pessimistic for what concerns the country than their own situation. Whereas more than half of the respondents declared that it will take at least two years before the country will resume to the pre-pandemic condition, a large majority of cases expect a return to normality of their own situation within one year. There is, however, a 17% of cases who predict that at least two years will be necessary.

Exploring individuals' family imaginaries (F) through online survey questions is complicated by social desirability and cognitive dissonance biases, as well as by the fact that imaginaries may change depending on the stage of life-course, e.g. before and after the birth of the first child (Vignoli et al. 2020b). Following the literature on expected happiness (Billari 2009) and affective forecast (Wilson and Gilbert 2005), we asked the respondents how much having a(nother) child would make them happy, on a scale from 0 to 10: *Ceteris paribus*, higher values on this variable can be interpreted as the ultimate outcome of a positive family imaginary.

Finally, following recommendations to grasp individual differences in psychological constructs with acceptable levels of precision (MacCallum et al. 2002), we asked respondents to report their fertility intentions in the following three years, on a scale from 0 ("definitely not") to 10 ("definitely yes"), both before (in January) and after the pandemic outbreak (at the time of the interview). The intermediate point of the scale was included to capture ambivalent or neutral positions. As shown in Table 1, the average values of the answers to the two questions are very similar, being 3.29 and 3.21, respectively. Thus, descriptive statistics do not suggest a substantial and generalized drop in pre-pandemic fertility intentions during the lockdown, although three factors should be taken into account.

First, responses to retrospective questions about fertility intentions may be adjusted *ex post* to accord with current intentions, as well as be affected by recall bias. Second, considering that two respondents out of three were aged 35 or less, fertility intentions at interview should have been found to slightly increase as compared to three/four months earlier: this applies especially for women that are approaching the end of their fertile period. Third, and most important, 41% of the sample answered 0 (“definitely not”) to questions on fertility intentions both in January and at interview, which means that, regardless of the above-mentioned measurement issues, for a substantial share of the respondents there simply was no room to observe a decline in fertility intentions due to the pandemic. Considering only individuals with non-zero intentions in January (N=2,068), the average fertility intentions in January was 6.25, dropping to 5.56 at the time of interview, with 34% of the respondents reporting a decline compared to 15% who reported higher intentions at interview. Irrespective of the actual magnitude of the absolute decline in fertility intentions, our aim is to understand which individual characteristics are associated with a decline (or an increase) in fertility intentions after the onset of the pandemic.

[Table 1 near here]

The experimental design

According to the Narrative Framework, media shared narratives play a crucial role in orienting decisions in a condition of uncertainty. Their influence in the decision-making process is, however, difficult to assess with observational data as it is hardly isolated from other factors, and because people are simultaneously exposed in their daily life to many and different shared narratives. For these reasons, the survey included an experiment that presented the respondents with a mock news bulletin concerning the expected end of the pandemic emergency, according to a task force made up of leading coronavirus experts in Italy. We opted for this treatment because a few days before data collection the Italian Prime Minister had announced a task force of academics and other prominent experts to address the COVID-

19 emergency, and to provide guidelines for the return to normality; thus, the treatment should have sounded realistic³. Respondents were randomly assigned one of five treatments, each presenting a different expected duration before the return to normality: three months, six months, one year, two years, or more than two years. We included a check for the validity of the treatment. Respondents were asked which type of scenario they were exposed to: the percentage of cases that could not recall the exact expected length of the pandemic included in the scenario amounts to 13% in our analytical sample, but drops to approximately 5% if we exclude people who confused “more than two years” with “two years”. After being exposed to the treatment, respondents were asked about their fertility intentions in the next three years in light of the expected duration of the emergency. Finally, respondents were debriefed about the fictitious nature of the information about the evolution of the pandemic they received. The experimental protocol received a formal approval from the Ethical Committee of the University of (*anonymized*).

Methods

The analytical strategy is twofold. For the analysis of changes in fertility intentions due to the pandemic we implemented the following stepwise OLS regression models:

$$M1: \Delta Fertility_{t1-t} = \mathbf{Status} (C) + \mathbf{Past} (B) + Fertility_t$$

$$M2: \Delta Fertility_{t1-t} = \mathbf{Media} (A1) + M1$$

$$M3: \Delta Fertility_{t1-t} = \mathbf{Perceptions} (D) + M2$$

$$M4: \Delta Fertility_{t1-t} = \mathbf{Imagineries} (F) + \mathbf{Expectations} (E) + M3$$

Where $\Delta Fertility_{t1-t}$ is the difference between fertility intentions at interview and fertility intentions in January ($Fertility_t$), the latter being included in all models together with basic sociodemographic variables and risk aversion ($Past (B)$). All elements of the stylized equations include the related variables as shown in Table 1. Model 1 only adds individuals’ objective

socioeconomic status and direct and indirect exposure to SARS-CoV-2, thus allowing to test hypotheses H1a and H1b. Models 2 to 4 cumulatively add additional variables to test whether media exposure (hypothesis H2), perceptions (hypothesis H3), expectations and imaginaries (hypotheses H4a and H4b) exert an additional influence on changes in fertility intentions. As a robustness check, Model 4 is also estimated on a subsample of respondents with non-zero fertility intentions in January. Finally, to disentangle the different mechanisms potentially underlying declines and increases in fertility intentions during the lockdown, and to offer a different evaluation of our effect sizes, Model 4 is also estimated through a multinomial logistic regression analyzing the probability of fertility intentions decreasing, increasing or remaining the same as in January.

In a second step, we analyzed the causal impact of a new shared narrative of the future (hypothesis H5) by means of our survey experiment. We compared respondents' post-treatment and pre-treatment fertility intentions by means of the following OLS regression model:

$$M5: \Delta Fertility_{t2-t1} = \mathbf{Treatment} + Recall + Fertility_{t1}$$

Where $\Delta Fertility_{t2-t1}$ is the difference between post- and pre-treatment fertility intentions ($Fertility_{t1}$). *Treatment* represents a set of dummies for the different scenarios, with the “three months” scenario as the reference category. *Recall* is a dummy variable taking the value 1 for the respondents who were not able to recall exactly which type of scenario they have been exposed to. In order to check for the exogeneity of our treatment, Model 5 has also been estimated with the addition of all variables included in Model 4 of the previous analytical step. As a robustness check, and to provide additional insights, we performed an analysis of possible heterogeneity in treatment effects. Finally, as in the previous analysis, Model 5 is also estimated through a multinomial logistic regression on the probability of decreasing, increasing or holding the same fertility intentions before and after the treatment. In this setting, the interplay between respondents' family imaginary and the exogenous shared narrative of the future will be evaluated through the inclusion in the model of the appropriate

interaction effects.

Results

Determinants of changes in fertility intentions during the lockdown

Table 2 presents the results of our stepwise OLS models, with the exclusion of coefficients related to basic sociodemographic factors, past experiences and personality traits (*Past (B)* in equation 1), not directly affected by the pandemic and government restrictions. Model 1 shows that individuals' adaptation of their fertility intentions after the pandemic outbreak is, in fact, moderated by their labor market status in January: Those who were temporarily employed in a low-skilled occupation, in the underground economy, or were not employed decreased their fertility intentions compared to low-skilled employees with a permanent contract. The same holds also for the highly skilled self-employed and students. However, the effects of variables that capture more directly the impact of the lockdown are virtually null. Neither (temporary) job losses or transitions to smart work after the pandemic outbreak, nor the degree of exposure to the virus have any influences on changes in fertility intentions, and the same holds for household income. The empirical evidence, thus, does not provide support for hypotheses H1a and H1b. Moreover, the stepwise inclusion of perceptions and shadow-of-the-future factors further reduces the impact of labor market status in January, so that the only effects of shadow-of-the-past factors having a *direct* effect on changes in fertility intentions (Model 4) are those of being a student and a highly skilled self-employed.

Model 2 adds the variable related to media exposure, i.e., the daily time spent watching TV and surfing the internet for political information and latest news, before and after the lockdown. Results suggest that individuals who report an increase in the hours of TV-watching also report reduced fertility intentions, in line with our hypothesis H2.

Model 3 includes perceptions of insecurity, and shows that individuals' insecurity concerning their own health and work, as well as the general economic situation, is negatively and significantly

associated with changes in fertility intentions, whereas insecurity concerning the political situation and the pandemic is not. Results are thus partially in line with our hypothesis H3, as insecurity concerning the pandemic is not directly associated with fertility intentions once insecurity concerning the personal situation is accounted for. The effects of the statistically significant variables are substantially not trivial: Considering their 0-10 range, beta coefficients indicate that most insecure respondents report an approximately half-point decrease in fertility intentions. Interestingly, in this model, the effects of media exposure, labor market status in January, and household income turn non-significant. This result suggests that perceptions mediate the (limited) influence of objective socioeconomic factors on post-pandemic changes in fertility intentions.

Model 4 adds our two measures of expectations concerning the evolution of the pandemic, and our proxy of the imaginary associated to childbearing. In line with our hypothesis H4a, expectations about the duration before respondents' own personal situation returns to pre-pandemic condition are negatively associated to post-pandemic fertility intentions, but statistically significant only in case of the most pessimistic forecast⁴. Following the same pattern observed for perceptions, expectations about the general situation in Italy do not exert any direct effects once expectations concerning the personal situation are controlled for. As far as the expected happiness from a(nother) child, this variable exerts both a statistically and substantively significant positive effect, also contributing to a substantial rise of model's R-squared. That is, respondents with a more positive imaginary related to childbearing have been less negatively influenced by the lockdown, and hold higher post-pandemic fertility intentions, in line with our hypothesis H4b.

[Table 2 near here]

All in all, Model 4 suggests that the most relevant individuals' characteristics to understand the fertility decision-making under COVID-induced uncertainty, among those directly affected by the pandemic and its responses, are perceptions and the shadow of the future, whereas objective measures

of individuals' socioeconomic situation and exposure to SARS-CoV-2 do not play a significant role⁵. This is not to say, however, that the shadow of the past is not at all relevant. Age, sex, the number of children and the area of residence are significantly associated to changes in fertility intentions: Childless women, living in Southern regions, and in their mid-30s hold higher post-pandemic intentions⁶.

In Table A1 in the Appendix B, Model 4 is implemented selecting only individuals with non-zero fertility intentions in January, before the onset of the pandemic in Italy. The most important changes to highlight are the substantial increases in the magnitude of the coefficients associated to media shared narratives, expectations and imaginary. This is not surprising, as individuals who had at least some positive fertility intentions are those more likely to have been negatively affected by the sudden uncertainty shock, and for whom the media coverage of the pandemic and pessimistic expectations about the future should be particularly salient. On the other hand, people with a more positive family imaginary are not only meant to keep their higher pre-pandemic fertility intentions, but may also be the ones who increased their fertility intentions as they aim for their imagined goal, regardless of COVID-induced uncertainty.

Table 3 provides additional insights by distinguishing between the effects of covariates on the probability of decreasing or increasing fertility intentions during the lockdown, through a multinomial logistic regression implemented on the whole sample. Consistent with our arguments, an increase in media exposure is associated to a higher relative risk of having reduced fertility intentions during the lockdown. The same holds for perceptions of insecurity concerning respondents' own health and work, whereas insecurity about the general economic situation reduces the relative risk of increasing vs. holding the same fertility intentions. Respondents' expectations about their personal situation are strongly, positively and monotonically associated only with the relative risk of decreasing vs. holding the same fertility intentions. Predicted probabilities calculated after the multinomial logistic regression indicate that those who think it will take more than 2 years before their personal situation returns to pre-pandemic condition have a 25% probability of having decreased their fertility intentions, compared

to 10% for those who did not perceive any changes. Differences in the predicted probabilities are, instead, small and statistically insignificant as far as the “increasing fertility” outcome is concerned.

On the contrary, and as expected, a more positive family imaginary is associated to both lower risks of having decreased and higher risks of having increased fertility intentions, but more strongly to the latter: A one-point increase in the expected happiness from childbirth is associated to a 1.3 percentage points lower predicted probability of having decreased fertility intentions, and to a 2.7 percentage points higher predicted probability of having increased them. Contrary to our predictions, the model also shows a positive effect of having had direct experience with the SARS-CoV-2 on the risk of increasing fertility intentions, whereas those who only had indirect experience of relatives of acquaintances with suspected contagion show a lower risk compared to those with no exposure at all. A tentative explanation is that for respondents who know close acquaintances or relatives who were put in isolation, COVID-19 is an unknown threat casting a shadow over their future; those who were actually tested positive, instead, in the large majority of cases only faced low to moderate symptoms, considering their young age, and can look to the future with more optimism also due to potentially acquired immunity.⁷

[Table 3 near here]

The causal impact of a new shared narrative of the future

Figure 3 shows the results of our experiment, that is post-treatment changes in respondents’ fertility intentions based on the type of scenario they were exposed to. The left panel plots beta coefficients associated to the different scenarios from an OLS model specified as in Model 5 above. The dotted zero line represents the reference scenario of a predicted return to normality in Italy within three months. Respondents who were exposed to scenarios of a return to normality not before two years significantly reduced their post-treatment fertility intentions: The intensity of the reduction is of approximately 0.6 points for the more pessimistic scenario, compared to the reference one.⁸ The right

panel shows that the coefficients are virtually identical after the inclusion of a long list of controls (all the variables included in Model 4 of Table 2), apart from the slightly smaller confidence intervals. This reinforces the causal interpretation of the results and confirms that the treatment was, indeed, exogenous.

[Figure 3 near here]

Also thanks to the robustness of the main findings, and the simplicity of the model, we explored possible heterogeneity in treatment effects, first of all by combinations of sex and area of residence.⁹ These additional models produce very similar patterns to that of Figure 3 across all combinations, although treatment effects are somewhat stronger in Central and Southern Italy: Beta coefficients associated to the “more than two years” scenario are -.45 (p-value 0.014) and -.56 (p-value 0.002) among women and men in Northern regions, and -.78 (p-value 0.001) and -.97 (p-value 0.001) among their counterparts in Central and Southern regions. This difference might be explained by the fact that in Northern regions, more severely hit by the pandemic, pre-treatment expectations about the returns to normality were already more pessimistic. In fact, our data suggest that 39% of the Northerners thought that more than two years would be necessary for the return to normality, against 30% of the Southerners.

More generally, it seems plausible for the treatment to have had stronger negative effects among respondents with more optimistic expectations and who were exposed to more pessimistic scenarios. We analyzed different treatment effects by pre-treatment expectations concerning the duration before a return to the pre-pandemic situation in Italy, distinguishing between respondents who expected it to occur within 12 months, two years and those who deemed necessary more than two years (the modal category, see Table 1): Beta coefficients associated to the “more than two years” scenario are -.35 (p-value 0.031), -.64 (p-value 0.000) and -.92 (p-value 0.000), respectively.

Finally, treatment effects have been evaluated estimating Model 5 through a multinomial logistic regression. In doing so, beyond providing a different estimate of the magnitude of effect sizes, we try to answer the following question: how did the treatment impact on respondents with different expected happiness from childbirth? Considering that a positive family imaginary came out to be more strongly associated to increases rather than decreases in fertility intentions (see Table 3), the multinomial logit seems the most appropriate setting for testing the existence of this possible interaction effect. The results, in the form of predicted probabilities, are shown in Figure 4, and suggest that the strongest decline in post-treatment fertility intentions occurred among those who have the strongest positive imaginary towards having a child and were exposed to the more negative scenarios about return to normality. On the other side, the strongest increase in fertility intentions occurred among those who have the strongest positive imaginary towards having a child and were exposed to the more positive scenarios about return to normality. Evaluating at the sample average of the family imaginary, approximately 6 points, respondents exposed to the “three months” scenario have a 12 percentage points higher probability of increasing their fertility intentions after the treatment, compared to those exposed to the “more than two years” scenario. The same figure rises to 20 percentage points if considering the highest value of the imaginary. While the decrease in fertility intentions among those who have the strongest positive imaginary and were exposed to the more negative scenarios about the return to normality may be due to the association between positive imaginaries and high-levels of pre-treatment intentions, the same does not hold for the increase in fertility intentions¹⁰. The sharp increase in fertility intentions among those who have the strongest positive family imaginary towards having a child and are exposed to the shorter expected durations of the pandemic suggests the presence of possible gaps between positive family imaginaries and pre-treatment intentions: In such situations, more optimistic expectations about the length of the pandemic allow to transform imaginaries in intentions. Results, thus, suggest that an optimistic shared narrative of the future coupled with a positive family imaginary can act as a multiplier of fertility intentions.

[Figure 4 near here]

Discussion

In this article, we argued that the explanation of individual decision-making in conditions of uncertainty, especially in case of long-term binding decisions such as fertility, needs a complex account of different temporal orientations. While the sociological and demographic literatures have widely demonstrated that fertility decisions are shaped by individuals' previous life experiences and socioeconomic status – what we referred to as the “shadow of the past” – rising uncertainty about the future necessitates an analytical framework that explicitly acknowledges its forward-looking nature. Building on recent developments from economic sociology on decision-making (Beckert 2016; Beckert and Bronk 2018), we relied on the Narrative Framework (Vignoli et al. 2020a, 2020b), which argues that personal narratives of the future, and their constitutive elements of expectations and imaginaries – what we referred to as the “shadow of the future” – represent crucial drivers for decision-making under conditions of uncertainty. Personal narratives of the future are not merely the result of psychological traits or idiosyncratic preferences, but are socially constructed in that they are shaped by “shared narratives”, in the form of public images produced by the media and other powerful opinion formers.

We exploited the “natural experiment” provided by the COVID-19 pandemic as an exceptional occasion to empirically test, for the first time, some of the predictions of the Narrative Framework. Narratives of the future are deemed to have become particularly important for fertility decisions in contemporary societies, but the recent COVID-19 pandemic, we argued, represented an enormous uncertainty shock which could have made the role of the shadow of the future particularly salient, over and above the effects of the shadow of the past. For instance, even scientists found it difficult to forecast the length and the consequences of the pandemic. However, people needed to confront themselves with a different daily life, form their own expectations about the return to “normality” and, on that basis,

formulate their life plans, including family formation. Government restrictions following the pandemic outbreak may not negatively influence the intention to have a(nother) child in light of an expected fast return to pre-pandemic conditions, whereas they may inhibit fertility in light of a more pessimistic view of a persistent uncertainty, irrespective of individuals' current socioeconomic status and its perception. At the same time, in such an unprecedented situation, in which expectations cannot be based on any firm grounds, imaginaries may play an additional, independent role.

Using unique data collected during the lockdown in Italy, the first Western country to experience widespread diffusion of the SARS-CoV-2 virus, we showed that objective indicators of individuals' exposure to its health and economic consequences played a very limited role in re-shaping individuals' fertility plans during the pandemic. This is not to say that the shadow of the past is not at all relevant: traditional predictors such as age, sex, the number of children and the area of residence are significantly associated to changes in fertility intentions. However, perceptions of insecurity, also supported by media shared narratives, and especially expectations and imaginaries, came out as crucial moderators of individuals' adaptation to a new context characterized by overwhelming uncertainty. Hence, the shadow of the future is more effective to understand the mechanisms through which the pandemic impacted on fertility intentions than simply measuring the objective exposure to the virus and its related socioeconomic consequences. Results suggest that whereas respondents' expectations of a long duration before the return to their pre-pandemic life are associated to a reduction of their pre-pandemic fertility intentions, a higher expected happiness from childbirth, proxy of a positive family imaginary, not only helped respondents to keep faith to their plans, but even encouraged them to increase their fertility intentions, COVID-induced uncertainty notwithstanding. Even if Italy, as well as other Western countries, is unlikely to witness an upsurge of "Corona-babies", our results suggest that a homogenous reaction in terms of a downward revision of childbearing plans is unlikely as well. In a situation in which rational decision-making was made difficult by fundamental uncertainty about future states of the world, those who more strongly valued parenthood may have reconsidered their life goals in favor of family plans.

The claim for a causal role of narratives of the future has been reinforced by our experimental analysis, through which we were able to assess the causal impact of a shared narrative of the future on fertility intentions. Respondents, indeed, were randomly exposed to different future scenarios on the expected length of the pandemic: Pre-treatment fertility intentions decrease monotonically with the increase of the expected length of the pandemic.

Of course, our work is not without limitations. First, the retrospective analysis of intentions may be influenced by cognitive dissonance reduction between current and pre-pandemic fertility intentions. Panel data would have been of course preferable, but the exceptional and unexpected situation of the pandemic did not allow to plan pre- and post-pandemic waves of a panel survey. Second, even if the Narrative Framework is built over the established pragmatist tradition, recently reappraised by Beckert and colleagues, its operationalization within a survey is a novelty. While for “traditional” variables related to past experiences and personality traits, status, and perceptions there are well-known and validated indicators available in the literature, for expectations and, especially, imaginaries there are just a few examples of their operationalization (Vignoli et al. 2020b). For imaginaries, we relied on the literature on the “expected happiness” (Billari 2009) from childbearing as a proxy of the presence of imaginaries; however, a more direct exploration of personal imaginaries of parenthood should be developed in future research.

Our conclusion that the shadow of the past is substantially less relevant than the shadow of the future to understand the adaptation of the fertility decision-making process in a situation of increasing uncertainty may be traced back, at least in part, to the fact that our empirical analyses focus on the short-term effects of an unprecedented uncertainty shock. In the next months, possible long-lasting economic hardship due to the second wave of the pandemic and its responses may gain of importance and influence possible reductions in fertility. However, we argue that our results are suggestive of what drives fertility decision-making in contemporary societies even beyond the pandemic emergency. Long-term societal changes driven by globalization, and the “harsh new world of economic insecurity” (Hacker 2019:xvi) that accompanied it, are likely to have made narratives of the future more salient for

fertility decisions in contemporary Western societies, also thanks to the increasing pervasiveness of the media coverage of the economy. The Great Recession, for instance, fueled general perceptions of uncertainty about future economic conditions that may have hampered fertility even in countries and social groups that were only marginally directly affected by massive lay-offs or company bankruptcy (Sobotka, Skirbekk, and Philipov 2011; Hofmann, Kreyenfeld, and Uhlendorff 2017). Preliminary empirical evidence corroborating this argument has been provided for the US, where it has been shown that fertility rates at the state-level have been influenced by unemployment rates at the national level and the press coverage of the economy, net of state-level economic conditions (Schneider 2015). Future research should clarify whether the spreading of narratives of an uncertain future are responsible for the homogeneous fertility decline currently faced by the US and European countries as of 2010.

Notes

¹ Expectations and imaginaries can be analytically distinguished and cannot be reduced to each other, even if “rational choice and functionalist theorizing in cultural sociology has schooled us not to notice future orientations sociologically, or to attribute them narrowly to “expectations”” (Mische 2014:441).

² The very high apparent mortality rate associated to COVID-19 in Italy is most likely a combination of several factors. Among them, Italy’s age population structure: 7% of the population of the country is aged at least 80, the highest percentage in Europe, and mortality due to COVID-19 is known to spike among people older than 70. In addition, the elderly have been particularly hit by the pandemic because of the spread of Sars-CoV-2 in nursing homes (Trabucchi and De Leo 2020). Finally, especially in the early stages of the pandemic and in Lombardy, the most severely hit Italian region, only people with serious symptoms were tested, so that the actual numbers of asymptomatic or paucisymptomatic infected is largely underestimated in the official numbers (Odone et al. 2020).

³ The full text of the treatment is reported in the Appendix A.

⁴ Results do not change if the family imaginary is not simultaneously included in the model.

⁵ Notwithstanding an obvious increase in the uncertainty around our estimates, this overall conclusion holds even when implementing separate models by sex.

⁶ Full models are available upon request to the authors.

⁷ In support of this interpretation, it is worth noticing that respondents with direct experience of the virus hold, *ceteris paribus*, more optimistic expectations about a rapid return to the pre-pandemic condition in Italy and feel less insecure about the pandemic, even compared to those with no exposure at all.

⁸ The results remain virtually identical with the exclusion of respondents that could not recall the exact scenario they have been exposed to (value 1 on the *Recall* dummy).

⁹ Full tables concerning the following analyses of heterogeneity in treatment effects are available upon request.

¹⁰ We tested, however, that results remain virtually the same if the model simultaneously includes an interaction between the treatment scenarios and pre-treatment fertility intentions.

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Sons.

Tables

Table 1 Descriptive Statistics (N=3,934)

	Mean	SD
<i>Past experiences and personality traits (B)</i>		
<i>Risk aversion (0-10)</i>	4.83	2.79
<i>Number of siblings (0-3+)</i>	1.22	0.84
<i>Living arrangement</i>		
No partner	.25	
LAT	.27	
Cohabiting	.16	
Legally married	.33	
<i>Number of children (0-2+)</i>	.42	.72
<i>Educational attainment</i>		
Lower-secondary	.12	
Upper-secondary	.47	
Tertiary	.41	
<i>Status (C)</i>		
<i>Exposure to SARS-CoV-2</i>		
No exposure	.60	
Indirect (suspected)	.10	
Indirect (positive)	.24	
Direct (suspected or positive)	.5	
<i>Labor market status (January)</i>		
Permanent employment (low)	.29	
Permanent employment (high)	.7	
Temporary employment (low)	.13	
Temporary employment (high)	.5	
Irregular employment	.2	
Self-employed (low)	.5	
Self-employed (high)	.5	
Not employed	.18	
Student	.16	
<i>Labor market transitions due to the lockdown</i>		
Toward not employment (from all other statuses)	.8	
Toward temporary inactivity (from employment)	.13	
Toward smart work (from employment)	.21	
<i>Net monthly household income (in €)</i>	1940.51	967.22
Missing on income	.17	
<i>Media shared narratives (A1)</i>		
<i>Media exposure (politics and latest news)</i>		
Hours of TV (January)	.93	1.01
Diff. in hours of TV (Now-January)	.67	1.15
Hours of Internet (January)	1	1.09
Diff. in hours of Internet (Now-January)	.61	1.03
<i>Perceptions of insecurity (D) due to:</i>		
<i>Own work (0-10)</i>	5.90	3.09
<i>Own health (0-10)</i>	3.95	2.31
<i>Diffusion of the pandemic (0-10)</i>	6.87	2.50
<i>General economic situation (0-10)</i>	6.39	2.57
<i>General political situation (0-10)</i>	6.98	2.50
<i>Expectations (E) concerning the duration:</i>		
<i>Before the return to pre-pandemic condition (own)</i>		
My condition did not change	.7	
3 months	.12	
6 months	.25	

12 months	.39	
2 years	.12	
More than 2 years	.5	
<i>Before the return to pre-pandemic condition (Italy)</i>		
3 months	.3	
6 months	.8	
12 months	.25	
2 years	.28	
More than 2 years	.36	
<i>Imaginary (F)</i>		
<i>How much would having a(nother) child make you happy? (0-10)</i>	5.89	3.74
<i>Fertility intentions in the next 3 years (H₁ and H₂)</i>		
<i>In January, were you planning to have a child? (0-10)</i>	3.29	3.78
<i>Today, do you plan to have a child? (0-10)</i>	3.21	3.62
Δ Fertility_intentions _{t1-t}	-0.08	2.19

Table 2 Determinants of changes in fertility intentions after the lockdown. OLS models.

	M1		M2		M3		M4	
	Coeff.	Std.Err.	Coeff.	Std.Err.	Coeff.	Std.Err.	Coeff.	Std.Err.
Status (C)								
<i>Labor status in January (ref. Permanent-low)</i>								
Permanent-high	0.0162	(0.145)	0.00800	(0.144)	0.0245	(0.143)	0.00967	(0.134)
Temporary-low	-0.257**	(0.122)	-0.256**	(0.122)	-0.170	(0.121)	-0.191	(0.116)
Temporary-high	-0.150	(0.183)	-0.155	(0.182)	-0.0685	(0.183)	-0.0869	(0.176)
Black job	-0.525*	(0.270)	-0.545**	(0.271)	-0.399	(0.268)	-0.359	(0.263)
Self-low	-0.187	(0.180)	-0.191	(0.180)	-0.108	(0.180)	-0.0419	(0.171)
Self-high	-0.373**	(0.162)	-0.394**	(0.162)	-0.304*	(0.161)	-0.290*	(0.153)
Not employed	-0.223*	(0.117)	-0.238**	(0.116)	-0.0155	(0.121)	0.00491	(0.118)
Student	-0.550***	(0.126)	-0.563***	(0.126)	-0.479***	(0.127)	-0.393***	(0.124)
HH income (1€)	5.53e-05	(3.46e-05)	5.67e-05*	(3.45e-05)	7.20e-06	(3.45e-05)	1.30e-05	(3.36e-05)
<i>Labor market transitions due to the lockdown</i>								
To not emp.	-0.00195	(0.152)	0.00609	(0.153)	0.168	(0.152)	0.171	(0.147)
Temp. not emp.	-0.0540	(0.109)	-0.0480	(0.109)	0.0784	(0.109)	0.0549	(0.104)
To smart work	0.0687	(0.0990)	0.0787	(0.0981)	0.0503	(0.0971)	0.0900	(0.0935)
<i>Exposure to SARS-CoV-2 (ref. No exposure)</i>								
Indirect (susp.)	-0.105	(0.100)	-0.101	(0.100)	-0.0766	(0.0983)	-0.131	(0.0946)
Indirect (pos.)	0.0497	(0.0790)	0.0695	(0.0791)	0.0928	(0.0787)	0.0708	(0.0765)
Direct	0.215	(0.154)	0.167	(0.156)	0.222	(0.156)	0.228	(0.149)
Media shared narratives (A₁)								
<i>Media exposure (politics and latest news)</i>								
TV hours (Jan.)			0.0411	(0.0429)	0.0348	(0.0428)	0.0259	(0.0418)
TV hours (Today-Jan.)			-0.0868**	(0.0442)	-0.0630	(0.0438)	-0.0827**	(0.0417)
Web hours (Jan.)			0.0601	(0.0399)	0.0550	(0.0393)	0.0677*	(0.0383)
Web hours (Today-Jan.)			-0.0181	(0.0496)	-0.0126	(0.0486)	-0.0209	(0.0466)
Perceptions of insecurity (D) due to:								
Own health					-0.0472***	(0.0160)	-0.0337**	(0.0157)
Own work					-0.0458***	(0.0140)	-0.0364***	(0.0138)
General economic situation					-0.0585***	(0.0175)	-0.0441**	(0.0172)
General political situation					-0.0112	(0.0170)	-0.0114	(0.0166)
Diffusion of the pandemic					-0.00146	(0.0169)	-0.00930	(0.0165)
Expectations (E)								
<i>Return to pre-pandemic own condition (ref. It did not change)</i>								
3 months							-0.0101	(0.139)
6 months							-0.0440	(0.120)
12 months							-0.130	(0.114)
2 years							-0.178	(0.142)
More than 2 years							-0.686***	(0.196)
<i>Return to pre-pandemic condition in Italy (ref. 3 months)</i>								
6 months							0.191	(0.238)
12 months							0.139	(0.216)
2 years							-0.0143	(0.219)
More than 2 years							0.0574	(0.218)
Imaginary (F)								
<i>Happiness from childbirth</i>								
Constant	0.624***	(0.174)	0.595***	(0.175)	1.588***	(0.231)	0.179***	(0.0115)
Observations	3,934		3,934		3,934		3,934	
R-squared	0.162		0.167		0.184		0.247	

Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1. All models control for fertility intentions in January, risk aversion, number of children, siblings, education, area of residence, sex, age, and age².

Table 3 Determinants of changes in fertility intentions after the lockdown. Multinomial logit models.

	Decrease vs. Same		Increase vs. Same	
	RRR	Std. Err.	RRR	Std. Err.
Status (C)				
<i>Labor status in January (ref. Permanent-low)</i>				
Permanent-high	1.009	(0.215)	0.971	(0.200)
Temporary-low	1.380*	(0.235)	1.183	(0.199)
Temporary-high	0.772	(0.204)	0.756	(0.200)
Black job	0.876	(0.303)	1.009	(0.389)
Self-low	1.079	(0.239)	0.984	(0.230)
Self-high	1.113	(0.261)	0.520**	(0.157)
Not employed	0.717*	(0.131)	0.959	(0.173)
Student	0.803	(0.176)	0.457***	(0.105)
HH income (1€)	0.999**	(5.99e-05)	0.999**	(5.88e-05)
<i>Labor market transitions due to the lockdown</i>				
To not emp.	0.862	(0.175)	1.045	(0.219)
Temp. not emp.	0.963	(0.148)	1.054	(0.172)
To smart work	1.086	(0.153)	1.134	(0.162)
<i>Exposure to SARS-CoV-2 (ref. No exposure)</i>				
Indirect (suspected)	1.052	(0.168)	0.730*	(0.132)
Indirect (positive)	1.029	(0.126)	0.966	(0.122)
Direct	1.220	(0.280)	1.692**	(0.364)
Media shared narratives (A1)				
<i>Media exposure (politics and latest news)</i>				
TV hours (Jan.)	1.062	(0.0696)	1.149**	(0.0656)
TV hours (Today-Jan.)	1.108**	(0.0578)	1.011	(0.0580)
Web hours (Jan.)	1.027	(0.0602)	1.118**	(0.0602)
Web hours (Today-Jan.)	1.180***	(0.0721)	1.117*	(0.0703)
Perceptions of insecurity (D) due to:				
<i>Own health</i>	1.090***	(0.0247)	1.015	(0.0249)
<i>Own work</i>	1.112***	(0.0257)	1.042*	(0.0231)
<i>General economic situation</i>	1.022	(0.0287)	0.938**	(0.0245)
<i>General political situation</i>	0.999	(0.0251)	0.999	(0.0255)
<i>Diffusion of the pandemic</i>	1.000	(0.0230)	0.963	(0.0229)
Expectations (E)				
<i>Return to pre-pandemic own condition (ref. It did not change)</i>				
3 months	1.463	(0.455)	1.138	(0.292)
6 months	2.091***	(0.582)	1.325	(0.299)
12 months	2.530***	(0.677)	1.477*	(0.321)
2 years	2.877***	(0.832)	1.211	(0.310)
More than 2 years	3.768***	(1.231)	0.846	(0.322)
<i>Return to pre-pandemic condition in Italy (ref. 3 months)</i>				
6 months	1.052	(0.383)	1.156	(0.378)
12 months	1.046	(0.350)	0.842	(0.259)
2 years	1.112	(0.376)	0.726	(0.229)
More than 2 years	0.827	(0.281)	0.671	(0.213)
Imaginary (F)				
<i>Expected happiness from child</i>	0.927***	(0.0196)	1.278***	(0.0199)
Constant	0.0117***	(0.00611)	0.0845***	(0.0406)
Observations	3,934			
Pseudo R-squared	0.191			

Relative risk ratios and robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1. All models control for fertility intentions in January, risk aversion, number of children, siblings, education, area of residence, sex, age, and age².

Figures

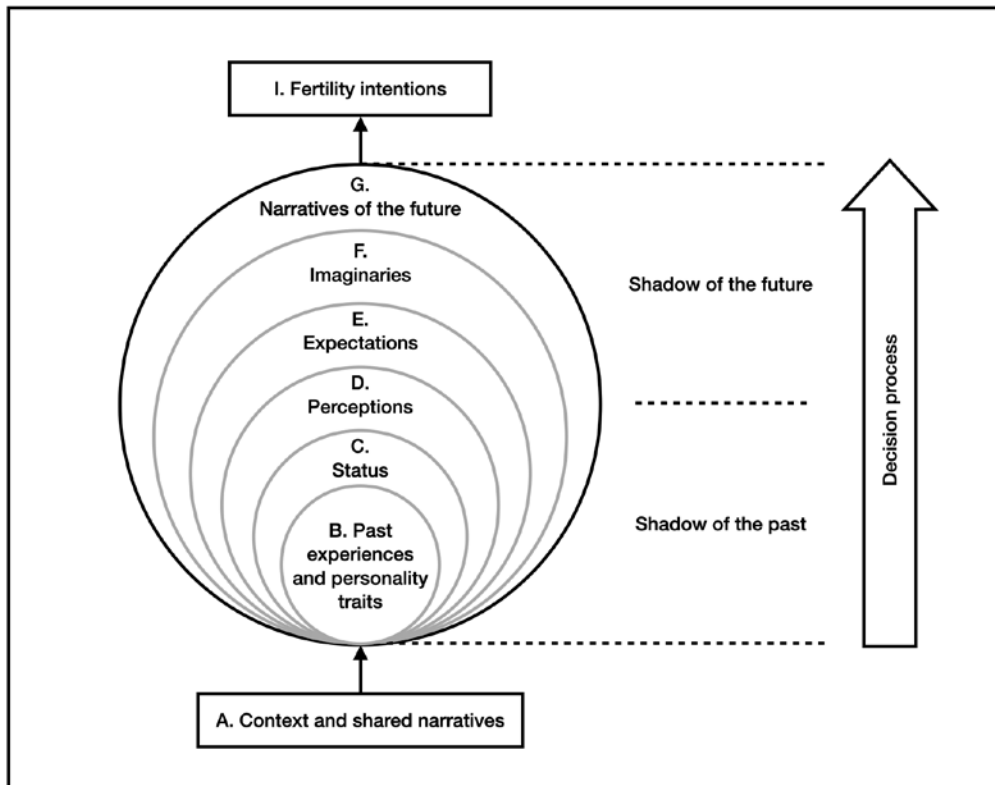


Figure 1. The Narrative Framework for the analysis of the fertility decision-making process

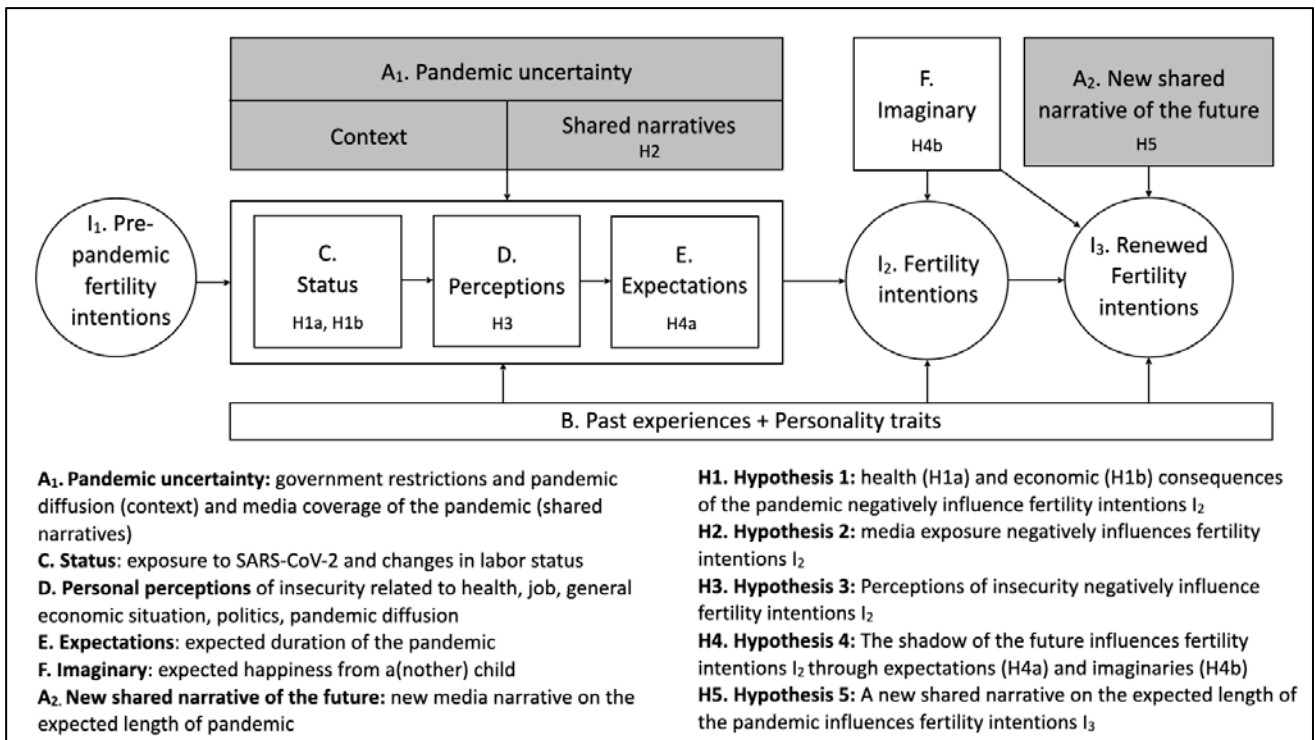


Figure 2. Adaptation of the Narrative Framework for the analysis of the fertility decision-making process during the COVID-19 pandemic.

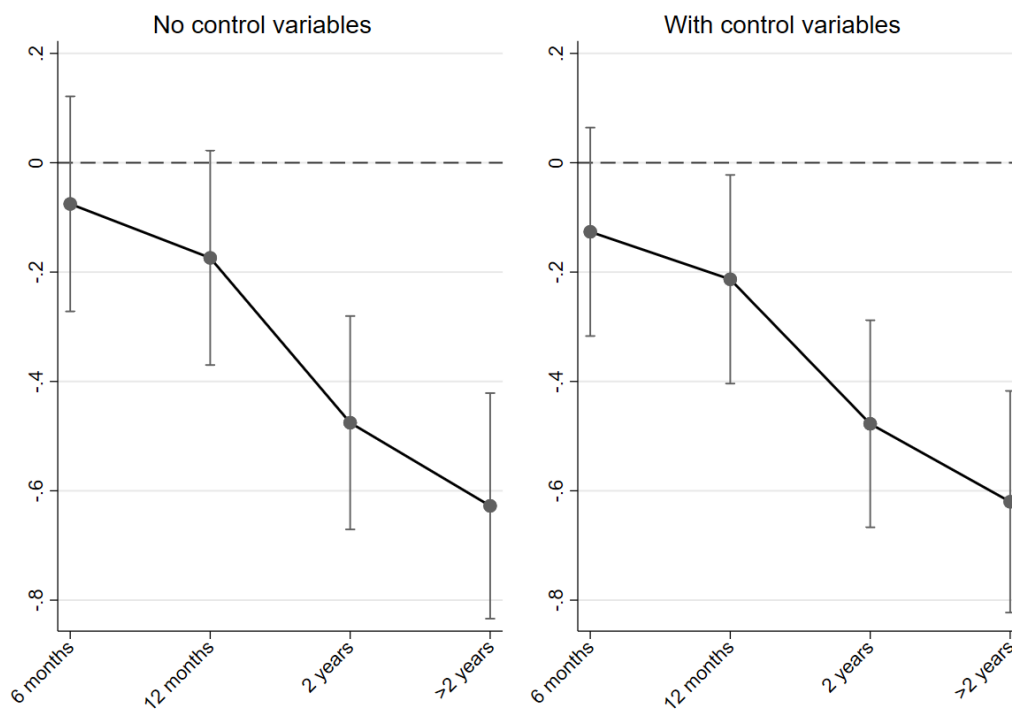


Figure 3. Changes in fertility intentions after the treatment, by different scenarios (“3 months” is the reference scenario). Results from OLS models with (right panel) and without (left panel) additional control variables. Both models control for fertility intentions at interview and the *Recall* dummy.

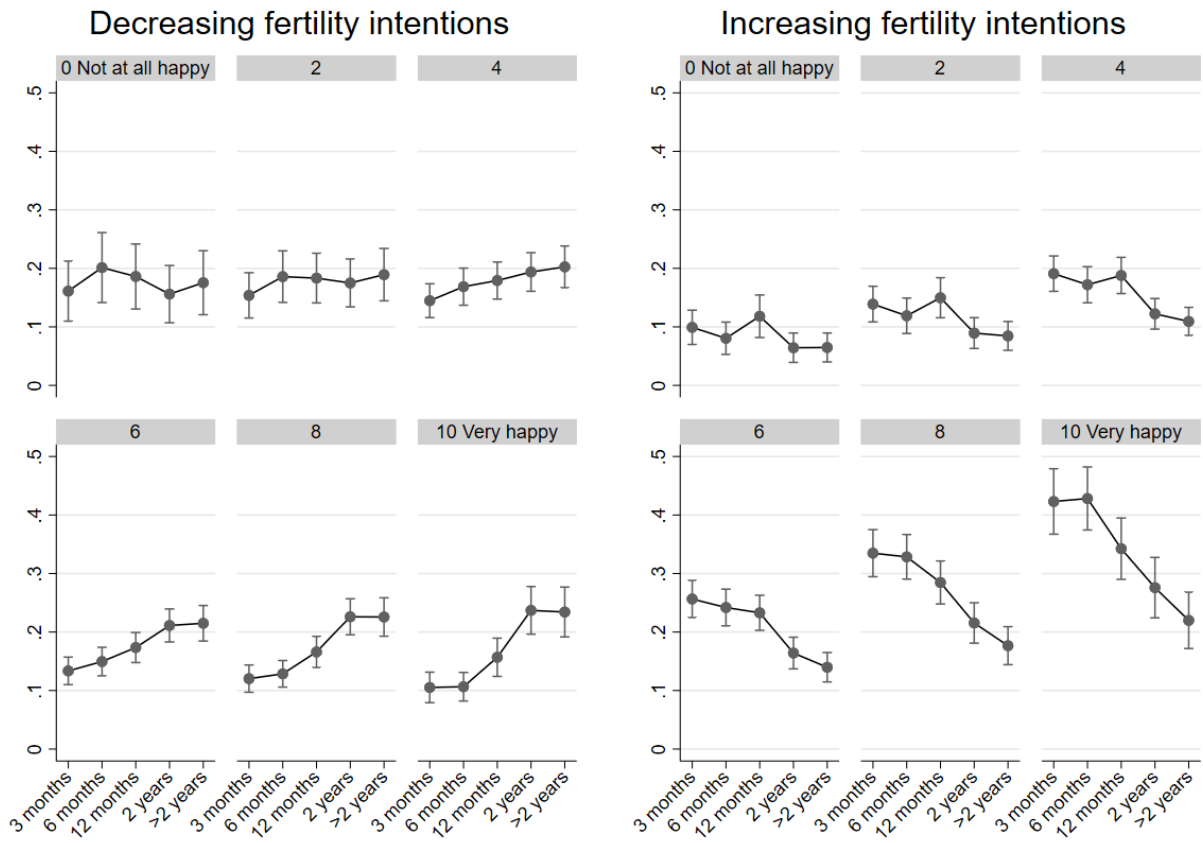


Figure 4. Predicted probabilities, after multinomial logistic regression, of decreasing or increasing fertility intentions after the treatment, by different scenarios and family imaginary. The model control for fertility intentions at interview and the *Recall* dummy.

Appendix A. Wording of the treatment

In the next screen we will provide you with up-to-date forecasts concerning the evolution of the Coronavirus pandemic.

Within the last few days there haven't been substantial variations in the number of contagions, hospitalizations, and deaths. The task force composed by leading experts of the Coronavirus pandemic eventually obtained sure predictions about the future of the pandemic in Italy.

The experts predict that the Coronavirus pandemic emergency will last **X** before a return to normality.

(5 randomized scenarios for **X**: 3 months, 6 months, 12 months, 2 years, more than 2 years.)

Appendix B. Determinants of changes in fertility intentions after the lockdown

Table A1 Determinants of changes in fertility intentions after the lockdown, only individuals with non-zero fertility intentions in January. OLS models.

	Coeff.	Std.Err.
<i>Status (C)</i>		
<i>Labor status in January (ref. Permanent-low)</i>		
Permanent-high	-0.0783	(0.175)
Temporary-low	-0.296*	(0.157)
Temporary-high	0.0517	(0.222)
Black job	-0.144	(0.400)
Self-low	-0.221	(0.248)
Self-high	-0.470**	(0.190)
Not employed	0.0968	(0.179)
Student	-0.266	(0.192)
<i>HH income (I€)</i>	0.000127**	(5.00e-05)
<i>Labor market transitions due to the lockdown</i>		
To not emp.	0.249	(0.209)
Temp. not emp.	0.139	(0.141)
To smart work	-0.0126	(0.122)
<i>Exposure to SARS-CoV-2 (ref. No exposure)</i>		
Indirect (suspected)	-0.0714	(0.137)
Indirect (positive)	0.148	(0.111)
Direct	0.261	(0.204)
<i>Media shared narratives (A1)</i>		
<i>Media exposure (politics and latest news)</i>		

TV hours (Jan.)	0.0250	(0.0627)
TV hours (Today-Jan.)	-0.136**	(0.0602)
Web hours (Jan.)	0.0932	(0.0590)
Web hours (Today-Jan.)	-0.0878	(0.0651)
Perceptions of insecurity (D) due to:		
<i>Own health</i>	-0.0442	(0.0270)
<i>Own work</i>	-0.0838***	(0.0238)
<i>General economic situation</i>	-0.0332	(0.0284)
<i>General political situation</i>	-0.0459*	(0.0255)
<i>Diffusion of the pandemic</i>	-0.0100	(0.0265)
Expectations (E)		
<i>Return to pre-pandemic own condition (ref. It did not change)</i>		
3 months	-0.122	(0.213)
6 months	-0.271	(0.181)
12 months	-0.367**	(0.173)
2 years	-0.564***	(0.204)
More than 2 years	-1.144***	(0.329)
<i>Return to pre-pandemic condition in Italy (ref. 3 months)</i>		
6 months	0.144	(0.397)
12 months	0.184	(0.377)
2 years	-0.108	(0.385)
More than 2 years	0.151	(0.385)
Imaginary (F)		
<i>Expected happiness from child</i>	0.255***	(0.0239)
Constant	0.918*	(0.480)
Observations	2,068	
R-squared	0.227	

Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1.
Model controls for fertility intentions in January, risk aversion, number of children, siblings, education, area of residence, sex, age, and age².

