Fertility intentions after pregnancy loss: how does a crisis event impact women's subsequent life course?

Introduction

Fertility intentions are an important factor in understanding fertility behavior (Ajzen & Klobas, 2013; Miller, 1994). But even if fertility intentions lead to child-positive fertility behavior, such as sexual intercourse without contraception, it is not sure that the goal of having a(nother) child will be achieved. Even after successful conception, there is no guarantee because a pregnancy loss is a relatively common event (Quenby et al., 2021). An involuntary end of a pregnancy can be seen as a crisis life event, as it interrupts the process of becoming a mother (of an additional child) and can cause psychological stress (Gerber-Epstein et al., 2009) – at least temporarily (Broen et al., 2005; Farren et al., 2018). According to the life course approach (Elder, 1995), such life events can affect an individual's attitudes, intentions and plans or behavior. Experiencing a pregnancy loss becomes part of the women's pregnancy history and therefore one of the background factors that influence the formation of fertility intentions according to the Theory of Planned Behavior (Ajzen & Klobas, 2013).

Psychological studies show that a miscarriage can be a traumatic experience (Walker & Davidson, 2010) that leads to a higher risk of (temporary) depression or anxiety (Broen et al., 2005; Farren et al., 2018; Gerber-Epstein et al., 2009). Also, greater fear of a future pregnancy that could involve complications can be a result of a miscarriage (Côté-Arsenault & O'Leary, 2015; Modiba & Nolte, 2007). However the importance of motherhood increases after a pregnancy loss (Erato et al., 2022).

Demographic research on fertility focuses mostly on "visible" fertility outcomes like fertility rates, parity, the age of a mother or fertility rates after major societal or environmental events (e.g. after a pandemic (Aassve et al., 2020; Rangel et al., 2020) or during an economic crisis (Sobotka et al., 2011) and how any dead children can be "compensated" by further children (Smith-Greenaway et al., 2022). There are various arguments why also pregnancy loss deserves attention in life-course research on fertility today. A considerable proportion of pregnancies ends before term across different times and countries, and thus it is part of the reproductive reality for many women. Furthermore, various developments suggest that the number of *recognized* miscarriages could increase further. First, medical advances have improved the detection of pregnancy, making it easier to identify. Previously, without home pregnancy tests or in certain countries, lost pregnancies could be mistaken for irregular menstruation. In situations where family planning is prioritized, couples who decide to conceive may test more frequently, increasing the chances

of identifying a miscarriage. Second, in western societies in general and also in Germany in particular, family formation is being postponed (Beaujouan, 2020). As age is a very important risk factor (if not the most important one) for miscarriage (De La Rochebrochard & Thonneau, 2002), the trend towards becoming a mother at a higher age may be causing miscarriages to happen more often. Although assisted reproductive technologies can help women to become pregnant, they offer little assistance with regard to miscarriages (Agenor & Bhattacharya, 2015; Huang et al., 2020). Third, the usage of assisted reproduction (i.e., IVF) is associated with higher risks of miscarriage (Bay et al., 2019). These considerations suggest that women, and their families, and practitioners in reproductive healthcare may increasingly be faced with pregnancy loss. This raises questions about how such an event will impact subsequent well-being and family planning (Huss, 2021; Shreffler et al., 2011). Therefore, it is necessary to understand how a miscarriage may shape a women's fertility intentions in both the short and long term.

Yet, to our knowledge there is no quantitative study that examines how a pregnancy loss affects fertility intentions and plans in the subsequent life course of women. Our study aims to fill this research gap; it investigates whether having experienced a first pregnancy loss changes the fertility intentions and plans of women in their subsequent life course. Our study context is Germany, a country that has had a lowest-low fertility of below 1.5 for decades, but has exceeded this mark since 2015 (Destatis, 2023). In 2019, Germany's TFR of 1.54 was just above the average for EU countries of 1.53 and the average mother's age at the birth of the first child was 29.8 years, that is slightly higher than the average for the EU countries of 29.4 years (Eurostat, 2023a, 2023b).

Background: definition, statistical recording and causes

The physical transition to motherhood begins at conception and therefore a miscarriage, or a stillbirth, represents a disruption of the process of becoming a mother (of an additional child). Miscarriage is the unintended ending of a pregnancy before the child can live by itself. It is estimated that 23 million pregnancies end in a miscarriage each year worldwide (Quenby et al., 2021). These numbers are rough approximations; there might be miscarriages that a woman did not recognize, as she did not know that she was pregnant and misinterpreted the spontaneous abortion as menstruation. In addition, even recognized cases of miscarriage in which medical health care is involved are often not registered in the official statistics. This is the case in Germany: stillbirths are registered in the official statistics, whereas miscarriages are not. In distinction to a stillbirth, a miscarriage is defined as a spontaneous abortion before the 24th week of the pregnancy or if the embryo weighs less than 500g. The weight limit was set at 1000g

until April 1994, and before 1979 a body length of at least 35 cm was specified (Destatis, 2019), which underlines how the definitions are not rigid and are set arbitrarily. But even the official statistics are hard to compare, as the time cut-off for the definition of miscarriage can also vary. For example, in Australia it is the 20th week of gestation, but the 24th week in the UK (Lee & Rowlands, 2015).

The status of a woman's pregnancy is intricately connected to the legal framework of a specific country. In Germany, for instance, the Maternity Protection Act stipulates the obligations of employers to implement necessary protective measures. Once a pregnant woman notifies her employer about her pregnancy, they are required to provide additional adaptations to her working conditions in order to safeguard her well-being and protect the unborn child. Different labor law regulations come into effect in the case of a pregnancy loss, depending on factors such as the gestational week. Maternity protection generally ceases after a miscarriage. If women suffer from physical or mental impairments due to the miscarriage, they can obtain a medical certificate. However, maternity protection does not apply in such instances, and regulations concerning continued wage payment during illness take effect. If a miscarriage occurs after the 12th week of pregnancy, there is a specific safeguard against termination of employment for a duration of four months. In the case of a stillbirth, the standard postnatal protection period is typically observed, during which the employer is prohibited from assigning work to the women (BMFSFJ, 2020).

The (first) demographic transition model (Notestein, 1945; Thompson, 1929) shows that improvements in hygiene and medicine in industrialized countries have significantly lowered infant and child mortality rates and that the probability of maternal death during childbirth is now very low[1], but that medical professionals can do little to reduce the numbers of miscarriages (Toth et al., 2023). The pregnant body is presumed to reject non-viable embryos depending on the incidence chromosomal errors and their impact on fetal development, for example (Brosens et al., 2022). Often, health care professionals are also involved in the process of a miscarriage to perform a curettage procedure in the case of a deceased embryo or to ensure the complete removal of all fetal tissue from the body, thereby minimizing the risk of infection. The personnel in the healthcare system should not only focus on physical health, but also sensitively address the situation of women and support them in their coping processes (Shreffler et al., 2011).

[1] Nevertheless, the situation continues to improve, and it should be noted that there are still differences between and within countries.

There are some risk factors that increase the possibility of miscarriage. These include emotional stress (e.g. after unexpected job loss (Di Nallo & Koksal, 2022)), unhealthy behavior (like smoking, adiposity, alcohol consuming) or higher age (De La Rochebrochard & Thonneau, 2002; Ng et al., 2021; Quenby et al., 2021). Knowledge of these risk factors may lead to the misconception that women have control over the positive outcome of their pregnancy (Malacrida, 1999). However, a miscarriage can happen in each and every pregnancy and most miscarriages remain unexplained (Agenor & Bhattacharya, 2015). Although it may be a common event, it has many negative consequences for the women who have experienced it, such as distress (Shreffler et al., 2011).

Pregnancy loss as a social construct and as a life course event

Miscarriage, an unexpected event that can occur in any pregnancy, especially in the early weeks, leads to a social phenomenon where women or couples keep the pregnancy secret, particularly in the first trimester. This reflects the widespread understanding that miscarriage is common during the initial stages of pregnancy. Conception is typically planned or anticipated, and there are various medical procedures and self-tests available to detect pregnancy, intensifying the emotional and psychological impact during this period. However, knowledge of the pregnancy is typically shared only with a select few, often including medical personnel. In response to a miscarriage, this group often emphasizes the potential for a successful future pregnancy (Letherby, 1993). Unfortunately, this downplays the experience of loss and trauma and deprives women of the opportunity to process the situation before making decisions about their future fertility (Aziz et al., 2022). Consequently, there may be pressure to conceive again quickly, as the miscarriage is often perceived as a failed attempt to have a child rather than the loss of a child. Within the healthcare context, studies indicate that women who have experienced miscarriage require psychological support, which is frequently lacking in the healthcare system.

As soon as the women realize that they are pregnant, this signals a transition to motherhood (or to continuing/taking another step if the child-positive intentions and behavior can be interpreted as steps of the transition to parenthood). Parkes (1988) defines a “psychological transition” as a positive or negative life event that is life-changing and can take place over a relatively short period of time. In the case of a miscarriage, the woman is in the psychosocial process of becoming a mother, which then changes abruptly to the psychosocial transition of losing a child.

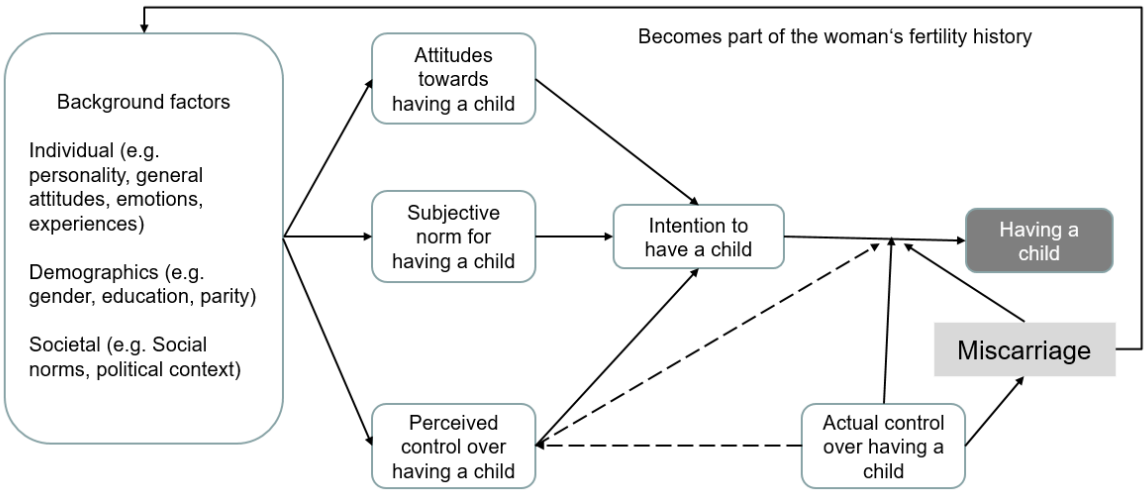
Theoretical considerations and working hypotheses

Theory of Planned Behavior: Previous studies show that fertility intentions vary across the life course (Gray et al., 2013; Kuhnt et al., 2021). We take the Theory of Planned Behavior (Ajzen & Klobas, 2013) as a starting point to investigate how fertility intentions may change after a crisis event.

At the core of the model are background factors such as personality, emotions or general attitudes, the demographics, social norms or political context. These background factors influence three kinds of beliefs: In terms of behavior beliefs (1), the individual weighs the positive and negative consequences of having a child, thereby engendering attitudes towards having a child. Normative beliefs (2) are the sum of perceived expectations and behavior from social groups or important referents (e.g. family, friends) that created the subjective social norm to have children. Control beliefs (3) are the result of assessing factors that enable or prevent women from having a child and the extent to which the individual can influence them, which leads to perceived behavioral control. This is connected with Bandura's concept of self-efficacy (Bandura, 1997). The actual control influences this perceived behavioral control and also has an impact on the behavior with respect to the behavior's outcome. The three described factors affect the intention to have a child, which leads to fertility behavior that results ideally in the outcome of a living child (Figure 1).

In the case of a woman that experience her first miscarriage, she was – most likely – already exhibiting child-positive behavior, as she got pregnant. As soon as the woman becomes aware that she is pregnant there might also be changes in her behavior, such as avoiding lifting heavy objects, or quitting habits that may harm the unborn baby (drinking alcohol, smoking, taking drugs/certain medicines). These behaviors can be interpreted as indications that a woman's pregnancy is already influencing her identity as the provider for her unborn child (Braun & Berg, 1993). This aligns with the societal expectations and norms associated with the role of motherhood.

Figure 1: Theory of planned behavior applied to fertility decisions in the context of miscarriages



Source: Own illustration inspired by Ajzen and Klobas (2013, p. 206)

A miscarriage, particularly in the first pregnancy, is a specific life event in a woman's fertility history, disrupting unintended the transition to motherhood and impeding the completion this transition – especially for childless woman experiencing her first pregnancy as she does not have any references to this kind of fertility experience. In the TPB, pregnancy loss falls between the intention to have a child and the outcome of "having a child" (Figure 1). The element of actual control becomes relevant in this context, as the termination of pregnancy occurs beyond the woman's sphere of influence and often for no apparent reason (Agenor & Bhattacharya, 2015). Consequently, the woman's physical state (along with the developing fetus) obstructs her from accomplishing the objective of delivering a (healthy) living child. This experience becomes integrated into the woman's fertility history and, according to the TPB, serves as background factor that may influence other factors which in turn influence the different beliefs that shape the intention to have a child.

Emotions are one of the background factors in the TPB. There are different psychological theories as to how a miscarriage can cause emotional distress (Farren et al., 2018; M. Frost & Condon, 1996; Gerber-Epstein et al., 2009; Jacob et al., 2007). The loss of the embryo can lead to bereavement, which is a more abstract loss in contrast to the death of a close person, for example, as the embryo was never born. The peculiarity of this loss may lead to the sociological concept of "disenfranchised grief" (Doka, 1999), a grief that cannot be shown openly. A reason for this is that the social network was unaware of the pregnancy and therefore unaware of the loss. Such a loss is not recognized as such in society. This is exacerbated

when people who are aware of the miscarriage trivialize the experience by encouraging future attempts to have a child. The woman perceives through this concept of not being able to show her own grief that this event is not a reason to diminish her desire for children, which is link to the normative believe of the TPB.

Theories of loss and grief: In contrast to the loss of another person a miscarriage can also be seen as a loss of a part of the woman's body (Pines, 1990). This view also needs to be seen in a social and historic context as there is a shift in how the fetus or embryo is regarded (Reagan, 2003; Williams, 2005) and therefore the woman's body is influenced by the norms and laws of the society she lives in. Methods to visualize the fetus or embryo have become more accurate and there is now more knowledge about the development of the unborn child. This is an aspect of the society the woman lives in, as the availability of knowledge is not just linked with technological advances, but may also be due to the health care system and/or the individual economic situation. Such progress can lead to the unborn child being seen at an earlier stage as an "individual person" and not as part of the woman's body. Nevertheless, the death of this unborn child also means that genetic material is lost and therefore a part of the mother. The first miscarriage can be perceived by the woman as betrayal by her own body (Borg & Lasker, 1981). A woman may question her own fertility, which may not have been the case before the event – especially in a first pregnancy. This aspect is an important part of the TPB, as it is clearly connected to the control beliefs (Ajzen & Klobas, 2013). Uncertainty surrounding her own fertility may also influence her identity as a woman, because she may not be able to fulfill the traditional role of a mother (Gerber-Epstein et al., 2009) and her identity as a mother, which includes to protect her child (Braun & Berg, 1993). Here cultural norms come into play which may have an impact on the individual normative beliefs in the TPB (Ajzen & Klobas, 2013).

An additional factor to consider is that during pregnancy, not only does the child physically grow, but also the expectations and aspirations surrounding the future life with this new family member. Unfortunately, these aspects remain unfulfilled, as does the opportunity to embrace the role of mother to this unique child following a miscarriage (J. Frost et al., 2007). The potential characteristics of this child, the woman's conception of herself as a parent and the opportunity to nurture this child (Leon, 1990) are profoundly disrupted. As a grief response, the importance of the mother role may increase (Erato et al., 2022). This reaction may be a link to the behavior beliefs of the TPB that help create the positive attitude towards having a child.

Another psychosocial approach sees the event of miscarriage as a traumatic experience with associated symptoms. In this context, the circumstances in which the woman is confronted with the death of the embryo or fetus may matter. These could include seeing the dead embryo on the ultrasound screen (Walker & Davidson, 2010) or having direct contact when the embryo or fetus leaves the woman's body. This is a paradox experience, as (western) societal norms and perceptions today – i.e., after the first demographic transition – almost exclusively associate birth with joy and the beginning of life, and death with grief and life's ending, whereas a miscarriage is giving birth to death (Leon, 1990). This event is not necessarily unexpected, as some women may have warning signs (Walker & Davidson, 2010) or may know of their risk factors. Often medical intervention is needed if the spontaneous abortion is incomplete. Many women reported that medical staff did not treat them in the way they needed and did not take care of their psychological health after this traumatic experience. As a consequence, some women may also experience fear of a future pregnancy or lose hope of becoming a mother (Modiba & Nolte, 2007).

Working hypotheses: We conclude this section by formulating working hypotheses for our empirical investigation. Embedding the previous findings into the TPB provides different indications of how pregnancy loss may influence the three beliefs and the fertility intentions change after a miscarriage. The traumatic experience of the miscarriage and the questioning of fertility may give rise to negative control beliefs. The experience of being pregnant as well as the response to one's own grief may strengthen the importance of the mother role and therefore have a positive impact on behavior beliefs. The (disenfranchised) grief and the trivialization of the experience by health care personal, for instance, may reinforce the normative beliefs. Therefore, we have adopted competing working hypotheses (H1 on direction of effect): The event of miscarriage may either increase (H1A) or decrease (H1B) fertility intentions. The occurrence of a pregnancy loss is considered a traumatic event that becomes a background factor in the Theory of Planned Behavior (TPB), which is also associated with grief. Both the shock and grief gradually diminish over time, as previous psychological studies have shown. For these reasons, our hypothesis (H2 on duration effects) is that the impact on changing fertility intentions is highest immediately after the event and diminishes over time. A miscarriage represents a short-term hiatus in a fertility outcome, leading us to assume that the effects of miscarriages are more likely to be reflected in short-term than in long-term indicators (H3 on type of indicator). For women who were childless prior to their first miscarriage, this experience is particularly special because they lack prior successful pregnancy and family-building experiences. The transition to motherhood, which is a new role for them, has been

abruptly interrupted. We hypothesize (H4 on prior status of motherhood) that women who were childless before the pregnancy loss differ from those who were already mothers previously.

Materials and Methods

For this study, we use eleven waves[2] from the German panel Analysis of Intimate Relationship and Family Dynamics (pairfam) (Brüderl et al., 2021), including the DemoDiff sample. The DemoDiff sample is an additional sample for eastern Germany and started in 2009/2010, that was the second wave of pairfam. We did not include the refreshment sample, as their first interview was in wave 11 (our last wave) because these cases contribute only one observation, which is not sufficient for panel analysis.

Our analytical sample comprises exclusively of women. We excluded all person-years after women reported two miscarriages. Furthermore, person-years with missing or non-ordinal values[3] in the variables included in the complete models, women who reported a miscarriage in their first survey, and individuals with only one observation were excluded. The steps of exclusions leading to the final analysis sample can be found in Appendix 1. The sample restriction has affected women with and without reported miscarriage to a similar extent, except for one independent variable (see in section "Dependent Variables", Table 1 and Appendix 1). Finally, our analytical sample consists of 5,197 individuals, corresponding to 33,264 person-years. Among these, 281 women (5.4%) reported experiencing a miscarriage.

Dependent Variables

For the analysis we use four dependent variables that differ essentially in the temporal dimensions of fertility intentions.

The first dependent variable, and also the most abstract in respect of time, is the personal *ideal number of children*. Here the respondents had to answer the question: "Assuming ideal circumstances: How many

[2] Because of the mode switch during the corona pandemic in wave 12, we do not use this wave.

[3] Although many studies classify response categories such as "I don't know" as missing values, we would like to emphasize that strictly speaking, these are not missing values Hayford and Agadjanian (2011). However, unfortunately, they cannot be included in our models because they do not possess an ordinal scale level.

children would you like to have altogether?" [4] (including any children, the respondent already has). It is a numeric open answer that we categorized in four values: "no children", "one child", "two children", and "three or more children". The answer "I don't know" was defined as non-ordinal value (Hayford & Agadjanian, 2011).

The second dependent variable is a long-term dimension of fertility intentions; the question asked for the realistic (additional) number of children the respondent thinks she will have[5], with the answer options "No (additional) children", "One (additional) child", "Two (additional) children, "Three (additional) children", "Four or more (additional) children", "I'm not sure", "I haven't thought about that yet". We combined the last two categories into "Three or more (additional) children". The answers "I'm not sure" and "I haven't thought about that yet" were defined as non-ordinal values. Note: the response "I'm not sure" was significantly more commonly mentioned by women who have experienced a miscarriage. This can be interpreted as an expression of questioning their own fertility after the pregnancy loss.

The third dependent variable is a short-term fertility plan that was covered by the question: "Do you intend to have a(nother) child within the next 2 years?" with the answer options: "Definitely not", "Probably not", "Probably yes", "Definitely yes" and "I haven't thought about that", which we treat as non-ordinal value. This question was filtered, and so only respondents who are considering having (more) children or who are unsure and who (or whose partner) is not reported to be infertile were asked that question. If the answer regarding the realistic (additional) number of children is 0, we treated this in the questions about the fertility plans as "Definitely not".

The forth dependent variable illustrates the shortest term; it is the *importance of having a(nother) child* at the moment. This variable is embedded in an item battery that asks the respondents to rate five different life goals or domains (like "Pursuing my education or career interests" or "Keeping in touch with friends") according to their personal importance. In sum, the respondents can assign a total of 15

[4] In wave 9, a filter was applied to exclude respondents who did not provide an answer to the question regarding their decision to abandon the desire to have children in wave 8.

[5] Since wave 3 there is a filter for respondents who are expecting a child first asking the binary question if they want more children in addition to the child they are currently expecting. If the respondents answered "yes," they were asked about the number of additional children. We coded those who answered "no" into the category "no (more) children".

importance points to five life goals or domains. In cases where the respondents answered with "I don't know," we consider it as non-ordinal value. In our analyses, we only use the item on the relative importance which individuals accord to “having a(nother) child” with higher values indicating higher importance.

Independent variables

As the research question focuses on the fertility intentions after a pregnancy loss, the event of pregnancy loss is the main explanatory variable. The respondents were asked if they had a miscarriage since the last interview. We created a binary variable, with 0 for all women that did not report a miscarriage and for all person-years before a miscarriage was reported, and 1 for all person-years from the wave in which the first miscarriage was reported. Note that the question was phrased rather generally referring to “a miscarriage” without asking for further details of it, such as if this was her first miscarriage or the gestational week. Previous studies interpreted this variable as “miscarriage” (Huss, 2021). As we cannot say with certainty whether it was actually a miscarriage, or a stillbirth, we rather use the general formulation "pregnancy loss" in our analysis.

Time-varying control variables are: number of biological children as a continuous variable, status of current pregnancy (dummy) and whether the woman has a partner (dummy). As the risk of miscarriage and infertility increases with age, we control for seven age groups in all our models (“<20”, “20-24”, “25-29”, “30-34”,”35-39”, “40-44”, “>45“). To control for a period effect, we include wave dummies in all models.

Whether a woman has already had a child, or children, before she experienced a pregnancy loss is included as a time constant variable that interacts with the event of pregnancy loss.

Method

We estimated fixed effect (FE) analysis (Allison, 2009; Ludwig & Brüderl, 2021) to show how pregnancy loss affects the intra-individual changes of the dependent variables, which are different aspects of fertility intentions. FE models only use the variation within a person and therefore the person-specific heterogeneity does not bias the estimation so the causal effect can be estimate (Brüderl Ludwig 2015). While other models usually assume unit homogeneity, FE models instead have the assumption of temporal homogeneity, which considers the event (treatment) as the only important time-varying variable. To weaken this assumption other time-varying variable that have an effect on the dependent variables should be included as well as non-treated persons.

In the first models (A1-D1) we use only a dummy variable of the event of pregnancy loss that compares changes in the four respective intentions before and after the event within a person. As we are also interested in the variation in the points of time after the event, in the further models we estimate distributed fixed effect models (Ludwig & Brüderl, 2021) (A2-D2). Accordingly, we set up a variable that shows the different point in time after the event: t1 denotes the wave in which the women report their pregnancy loss, t2 corresponds to the wave after the reported pregnancy loss, and t3 indicate for the time points two or more waves after the pregnancy loss was reported. The value t0 is the reference category with all person-years before the pregnancy loss as well as all women that reported no pregnancy loss throughout the survey.

The changing number of children[6] is an essential control variable in respect of all dimensions of fertility intentions. Therefore, it is included in the third models (A3-D3). We include the other control variables pregnancy status and having a partner in the next models (A4-D4). In the last models (M5a-M5d) we include interaction effects on the event of pregnancy loss with the prior status of. In addition, we estimated separate models for the subgroups of women who were mothers or childless before the pregnancy loss. All analyses were performed using the statistical program Stata.

Results

Table 1 displays descriptive statistics of the variables that are included in the full models separately for women who reported a pregnancy loss and women who did not. The description shows differences in the dependent variables between the two groups: women who report a pregnancy loss have on average a slightly higher ideal and realistic number of children, they are more likely to plan to have a(nother) child in the next 2 years, and they assign more importance points to the life goal of having a(nother) child. Although there appears to be an association between fertility intentions and pregnancy loss, these descriptive analyses are insufficient to draw any conclusions. Further panel analyses therefore have to be

[6] 6 women report a first living birth and a pregnancy loss in the same wave. In those few cases we ca not say whether which event came first.

conducted. For the subsequent panel analyses, cases were excluded as described previously and in the table in the appendix (Appendix 1).

Table 1: Descriptive of dependent variables and control variables

	Woman without a reported miscarriage		Woman with a reported miscarriage							
			(t0)		(t1)		(t2)		(t3)	
	N	%	N	%	N	%	N	%	N	%
Dependent Variables										
Ideal number of children (A)										
0	2,164	5.57	36	2.49	5	1.51	7	3.43	21	2.89
1	3,188	8.20	98	6.79	16	4.82	11	5.39	50	6.89
2	20,669	53.19	720	49.86	166	50.00	88	43.14	302	41.60
3+	11,469	29.52	563	38.99	143	43.07	93	45.59	309	42.56
I don't know	631	1.62	19	1.32	0	0.00	4	1.96	6	0.83
Realistic number of children (B)										
0	17,278	44.52	238	16.48	85	25.6	88	43.14	486	66.94
1	5,644	14.52	427	29.57	109	32.83	55	26.96	101	13.91
2	10,263	26.41	525	36.36	73	21.99	29	14.22	56	7.71
3+	2,297	5.91	98	6.79	14	4.22	4	1.96	8	1.10
I'm not sure	2,142	5.51	113	7.83	43	12.95	26	12.75	62	8.54
I haven't thought about that yet	1,082	2.78	40	2.77	8	2.41	2	0.98	9	1.24
Plans to have child next 2 years (C)										
Definitely not	26,442	68.05	485	33.59	102	30.72	97	47.55	505	69.56
Probably not	3,722	9.58	172	11.91	24	7.23	15	7.35	37	5.1
Probably yes	3,546	9.13	342	23.68	48	14.46	53	25.98	72	9.92
Definitely yes	2,088	5.37	295	20.43	126	37.95	28	13.73	64	8.82
I haven't thought about that yet	656	1.69	21	1.45	5	1.51	2	0.98	14	1.93
I don't know	92	0.24	4	0.28	0	0.00	0	0.00	0	0.00
Importance of having a child (points) (D)										
0-3	35,225	90.65	1,132	78.39	191	57.53	163	79.9	655	90.22
4-7	3,410	8.78	303	20.98	137	41.27	36	17.65	66	9.09
8-11	111	0.29	6	0.42	4	1.2	5	2.45	1	0.14
12-15	11	0.03	1	0.07	0	0.00	0	0.00	0	0.00
I don't know	53	0.14	1	0.07	0	0.00	0	0.00	2	0.28
Independent Variables										
Age (Mean/SD)	30.65	9.07	28.31	6.96	31.73	6.44	32.77	6.53	36.12	6.61
Number of children										
0	19,416	49.97	869	60.18	139	41.87	58	28.43	124	17.08
1	6,898	17.75	317	21.95	107	32.23	61	29	181	24.93
2	8,684	22.35	185	12.81	60	18.07	56	27.45	263	36.23
3+	3,855	9.92	73	5.06	26	7.83	29	14.22	158	21.76
Has a partner (0/1)	28,075	72.25	1,158	80.19	307	92.47	185	90.69	631	86.91
Current pregnancy (0/1)	937	2.41	67	4.64	61	18.37	21	10.29	36	4.96
n (individuals)	6797		332		332		204		174	
N (person-years)	38,858		1,444		332		204		726	

Data: calculations based on pairfam wave 1-11

Table 2 and 3 display the results of the basic and the distributed linear fixed effect regression models that show the effect of a pregnancy loss on different dimensions of fertility intentions (the full models are displayed in Appendix 2). The basic models (A1-D1) suggest that pregnancy loss has a negative effect on the *realistic number of children* (B) as well as on the *plan to have a(nother) child within the next 2 years* (C) (-0.27). The *ideal number of children* (A) and the *importance to have a(nother) child* (D) appear not affected. However, these basic models underestimate the development over time after a pregnancy loss. With a more differentiated view of the progression, distributed linear fixed effect models (A2-D2) and also those models with the number of children (A3-D3) and including other time-variant control variables (A4-D4) show a different picture. For illustration, the coefficients and confidence intervals are plotted in Figure 2. The *ideal number of children* stays relatively stable over time. Therefore, it can be concluded that a pregnancy loss does not result in a change of this ideal. The *realistic number of children* was negatively affected in the basic model (B1). In the distributed model (B2), we find no effect in the wave in which the women report the pregnancy loss, but we observe a decline in the following years (-0.3 & -0.43). These effects lose in size and significance if the control variables are included (B3 & B4). As mentioned before, the coefficients of the *plan to have a(nother) child* decrease after a pregnancy loss in the basic FE-model (C1), but a closer look at the different points in time reveals that the shift is in different directions: in the wave in which the women report their pregnancy loss, the *plan to have a(nother) child within the next 2 years* even increases (t1=0.22), but they decrease in the waves after the reporting (t2=-0.34 & t3=-0.69). Including the control variables increases the effect size as well as the level of significance for t1 (C3 & C4). In contrast, we find a lower effect size and level of significance in the waves after the reported pregnancy loss, and so only t3 remains with a small negative significant effect (-0.19). The *importance of the life goal of having a(nother) child* showed no effect in the simple FE (M1d), but in all distributed models (D2, D3, and D4) the importance increases in the wave in which the women report their pregnancy loss.

Table 2: Linear Fixed Effects Regression models (A & B)

	Ideal number of children (A)					Realistic number of (additional) children (B)				
Models	A1	A2	A3	A4	A5	B1	B2	B3	B4	B5
	b	b	b	b	b	b	b	b	b	b
Pregnancy loss	0.06					-0.27***				
t1		0.06	0.06	0.04	0.01		-0.07	-0.04	0.02	0.03
t2		0.06	0.01	0.00	0.09		-0.30***	-0.09	-0.04	-0.07
t3		0.05	-0.02	-0.03	0.01		-0.43***	-0.12*	-0.08	-0.04
prev. childless*t1					0.06					-0.02
prev. childless*t2					-0.20*					0.06
prev. childless*t3					-0.09					-0.09
Constant	2.10***	2.10***	2.00***	1.98***	1.98***	1.20***	1.20**	1.62***	1.64***	1.64***
n (observations)	33264	33264	33264	33264	33264	33264	33264	33264	33264	33264
N (individuals)	5197	5197	5197	5197	5197	5197	5197	5197	5197	5197
adj. within-R^2	0.00	0.00	0.01	0.01	0.01	0.15	0.15	0.24	0.25	0.25

Data: calculations based on pairfam wave 1-11

Note: *p < 0.05, **p < 0.01, ***p < 0.001; b-coefficients, all models are controlled by wave-dummy; t0= year before pregnancy loss (reference), t1=wave of reported pregnancy loss, t2=one wave after pregnancy loss was reported, t3= two or more waves after pregnancy loss was reported; prev. childless*tx = Interaction between status of mother before pregnancy loss and time after pregnancy loss

Table 3: Linear Fixed Effects Regression models (C & D)

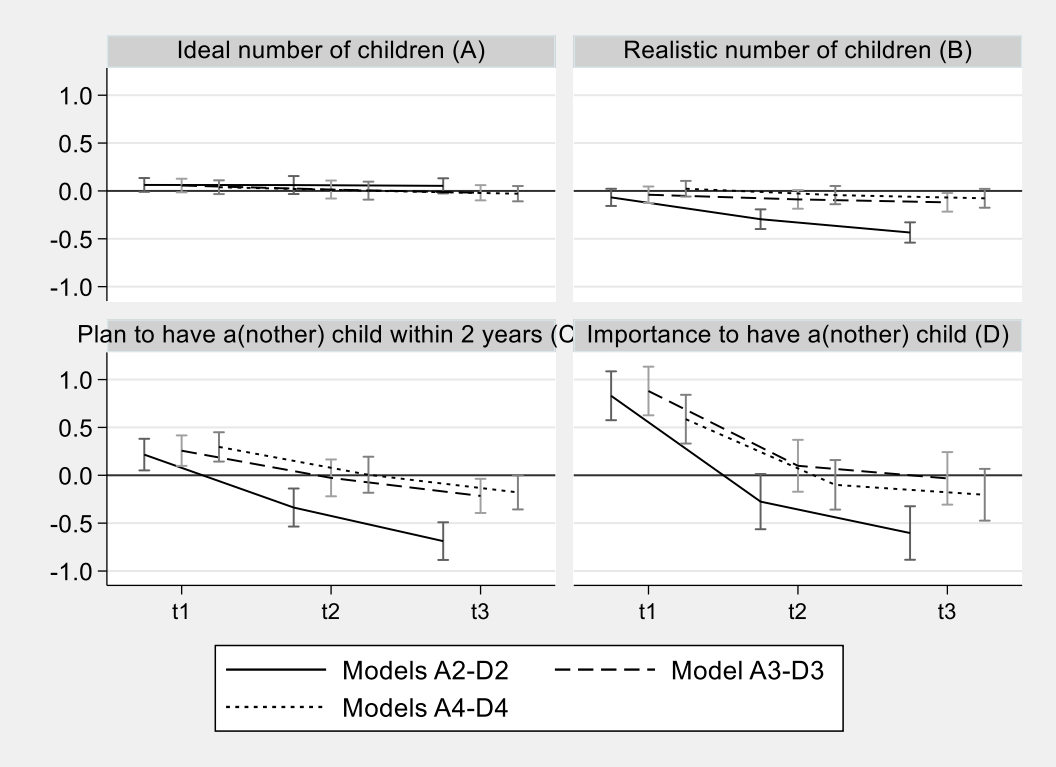
	Plan to have a(nother) child in the next 2 years (C)					Importance to have a child (D)				
Models	C1	C2	C3	C4	C5	D1	D2	D3	D4	D5
	b	b	b	b	b	b	b	b	b	b
Pregnancy loss	-0.27***					0.01				
t1		0.22*	0.26**	0.30***	0.10		0.83***	0.88***	0.59***	0.37*
t2		-0.34***	-0.03	0.01	-0.24		-0.28	0.10	-0.10	-0.41*
t3		-0.69***	-0.22*	-0.18*	-0.43***		-0.60***	-0.03	-0.20	-0.45**
prev. childless*t1					0.42**					0.46
prev. childless*t2					0.54**					0.68**
prev. childless*t3					0.55**					0.54*
Constant	0.24***	0.24***	0.88***	0.78***	0.78***	1.41***	1.41***	2.18***	1.88***	1.88***
n (observations)	33264	33264	33264	33264	33264	33264	33264	33264	33264	33264
N (individuals)	5197	5197	5197	5197	5197	5197	5197	5197	5197	5197
adj. within-R^2	0.09	0.10	0.20	0.22	0.22	0.04	0.05	0.09	0.14	0.14

Data: calculations based on pairfam wave 1-11

Note: *p < 0.05, **p < 0.01, ***p < 0.001; b-coefficients, all models are controlled by wave-dummy; t0= year before pregnancy loss (reference), t1=wave of reported pregnancy loss, t2=one wave after pregnancy loss was reported, t3= two or more waves after pregnancy loss was reported; prev. childless*tx = Interaction between status of mother before pregnancy loss and time after pregnancy loss

For illustration of the changes of the dependent variables over time, we plotted the coefficients and the confidence intervals in Figure 2. No changes can be seen for the *ideal number of children* (A) as well as the *realistic number of children* (B), especially in the model that includes the control variables. For the *plans to have a(nother) child within the next 2 years* (C) and the *importance of having a(nother) child* (D), there is a rise in the wave in which the women report a pregnancy loss, that is stable after including the control variables and a decline in the waves after it (t2 & t3), that lose the effect after controlling for time-variant variables (C3 & C4; D3 &D4).

Figure 2: Changes in fertility intentions after a pregnancy loss



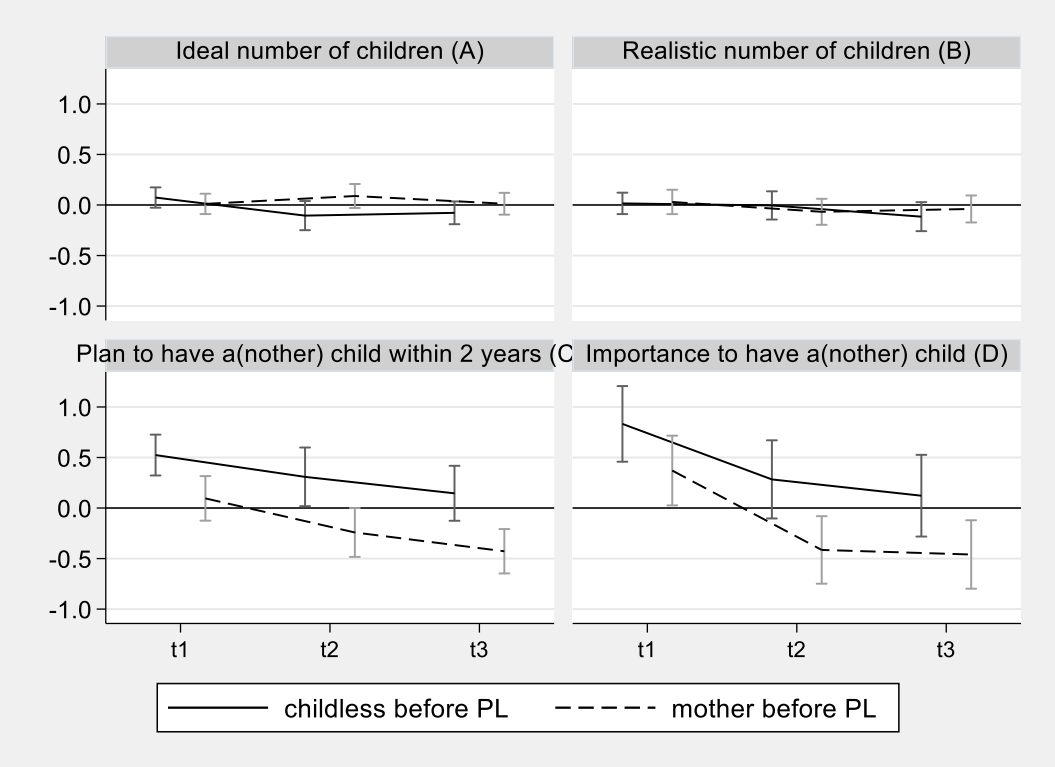
Data: calculations based on pairfam wave 1-11

Note: Models A2-D2 are controlled by age groups and period (wave-dummies). Models A3-D3 are controlled by age groups, period (wave-dummies) and number of children Models A4-D4 are controlled by age groups, period (wave-dummies), partner, number of children and current pregnancy; t0 (reference)= year before pregnancy loss, t1=wave of reported pregnancy loss, t2=one wave after pregnancy loss was reported, t3= two or more waves after pregnancy loss was reported

Figure 3 show trajectories of changing fertility intentions for separate subgroups whether they were already mothers before the event of pregnancy loss or not (see full models in Appendix 3 & Appendix 4). Like in the analyses before, the estimates for the *ideal number of children* as well as the *realistic number*

of children do not change much after a pregnancy loss. However, the *plan to have another child in the next 2 years* and the *importance to have a(nother)child* show different patterns between the two subgroups. For the childless, there is an increase in both dimensions of childbearing after pregnancy loss and also in the waves after the report, although here the effect weakens over time. In contrast, for the previous mothers, there is a smaller increase in the wave in which the pregnancy loss was reported and a reduction in those two intentions in the subsequent waves. These results are consistent with the models in which the interaction between event and previous childlessness was included: here, also, an increase is seen for the interaction coefficient for the two dimensions of fertility intention mentioned above (Table 2 C5 & D5).

Figure 3: Changes in fertility intentions after a pregnancy loss by status of motherhood before the event



Data: calculations based on pairfam wave 1-11

Note: Women who were childless before pregnancy loss N=126 with 891 person-years; Women who had a child/children before pregnancy loss N=155 with 1,061 person-years. All models are controlled by age groups, period (wave-dummies), partner, number of children and current pregnancy; t0 (reference)= year before pregnancy loss, t1=wave of reported pregnancy loss, t2=one wave after pregnancy loss was reported, t3= two or more waves after pregnancy loss was reported

Robustness checks

To check our results for robustness, we estimated models with a linear time effect, including the basic model time after the pregnancy loss as a linear variable, and also the years after the pregnancy loss *squared* to account for non-linear effects (Appendix 5). These analyses produce results similar to those presented above: after the pregnancy loss the *plans* and also the *importance of having a(nother) child* increase, but decrease over the years.

Because pregnancy is a status in the transition of motherhood, and it may also be a status of uncertainty especially for women who have experienced a pregnancy loss, we also estimated models without the person-years in which women report a pregnancy (Appendix 6). Those models show the same direction of change in the fertility intentions after a pregnancy loss.

As age is an important factor for fertility intentions as well as for the risk of pregnancy loss, we estimated the models separately for all 3 birth cohorts included in the pairfam sample: 1991-1993 (Appendix 7) 1981-1983 (Appendix 8) 1971-1973 (Appendix 9). The oldest cohort stands out here because in all dimensions of fertility intentions, there is no (significant) increase observed. This suggests that older women might be confronted with increasing infertility as they age, and thus a miscarriage takes on a different meaning than it does for younger birth cohorts.

Discussion and conclusion

Against the backdrop of low fertility, rising ages at childbirth and high childlessness, our study investigated how a pregnancy loss, which we framed as a crisis event in the life course, affects fertility intentions of women in the first years thereafter. We used representative panel data from Germany (pairfam) and estimated the effects of a reported miscarriage on four different indicators of fertility intentions.

The results of our study show that the crisis event of a pregnancy loss can change the fertility intentions, but the effect varied by indicator. Whereas the ideal as well as the realistic number of children are not found to be affected in our sample by the pregnancy loss, our results show an increase in the plans to have a(nother) child within the next 2 years as well as the importance of having a(nother) child. Those findings are even stronger if the women were childless before the pregnancy loss. On one hand, the results can be interpreted as a grief response, in line with previous studies which showed an increase of the importance of the role of motherhood (Erato et al., 2022). On the other hand, it seems that women tend to not interrupt or postpone their wish to have a child, as they have already made the decision in favor of child-

positive behavior and decided (or at least anticipated) that the general circumstances they are living in allow them to have a child. The former pregnancy that ended spontaneously may evoke the role of the mother, and a potential child becomes more realistic. From the detected pregnancy until the pregnancy loss, a woman in this situation faces the consequence that she will become a mother[7] and may have a concrete notion of how she will be in this new role. It seems that the loss of a pregnancy and the experience of disrupting the transition to motherhood do not impede these perceptions.

In respect of our competing hypotheses, our results support H1A on the direction of an effect: after a pregnancy loss the fertility intentions increase. However, it must be emphasized that this effect diminishes over time and there may even be a decrease in the fertility intentions, as we assumed in our second hypothesis (H2) on duration effects. As the ideal and realistic number of children, which are relatively long-term determinants, were not shown to be affected in our sample from the event of pregnancy loss, the results also support H3 on type of indicator: The effects of pregnancy loss are more likely to be reflected in short-term than in long-term indicators. Women who were childless before the miscarriage showed higher effects on change of the fertility intentions after a pregnancy loss, which support H4 on prior status of motherhood.

To ensure comprehensive and transparent scientific inquiry, it is crucial to acknowledge and delineate the inherent limitations associated with this study: The first limitation lies in the formulation of the question that asks about miscarriages, which was phrased as follows: “Did you have a miscarriage after the last interview in [month and year of interview of previous wave (d5, d6)]?”. Unfortunately, there is no information in what gestational week the pregnancy ended, which could also have an influence on the importance or intention to have a child: the longer the pregnancy, the stronger the bonding with the unborn might be, and also the miscarriage might be more detrimental and accompanied by more (and more serious) physical and psychological consequences. In later gestational ages, there may also be a need for increased, more intense and more invasive medical interventions, which might be a more traumatic experience than in very early stages of a pregnancy. With more psychological and physiological burden, the impact of later fertility intentions may be more negative. Yet, the sensitivity of the topic may be the

[7] Unless she decides to have an abortion within the first 12 weeks of pregnancy; it is possible to terminate a pregnancy in Germany during this period.

reason why further detailed information was not asked in this rather general family-demographic survey (Cowan, 2014; Lindberg & Scott, 2018). Secondly, underreporting can be assumed, as there is no information on how many miscarriages the women had between the interviews nor if they had any miscarriages before the first interview (the question was asked only from the second wave on). However, we know the time interval between two waves and, as the respondents were interviewed annually, the time span is relatively small. Also, there are no further questions about other unintended pregnancy losses. Accordingly, women who experienced a stillbirth may report this either as a miscarriage – or not at all. Thirdly, another reason why our study may underestimate the number of miscarriages is the panel attrition. While there is no evidence that panel attrition increases after reported pregnancy loss, it may be that women who have experienced a pregnancy loss and thus have suffered particular psychological stress no longer participate in a survey about family or not at all. Fourthly, the number of miscarriages may affect the later fertility intentions differently. We restricted our sample to the women who reported one miscarriage, and among the women who had reported more than one, we selected only the observation time until before this second event was reported. The reason for doing so was the relatively small number of cases with multiple events in our sample; in addition, for theoretical reasons, we chose to focus on the first pregnancy loss, because it might have a different meaning in the life course of a woman than recurrent miscarriage. It seems likely that the effect of a pregnancy loss on later fertility intentions may vary by number of events. In our analyses, we found no negative effects at all, only positive ones –this association may change after multiple events when frustration and the physical demands of repeated pregnancies and their untimely endings may accrue to a level with which the women can no longer cope.

In sum, we may underestimate the number of events and probably also the number of women affected in our estimation. On one hand, this would imply that we underestimate the effect on intentions. On the other hand, the length of the pregnancy, the circumstances of its ending and the number of miscarriages of one woman may have a non-linear effect on her intentions to have a (further) child. Future analyses, based on larger samples, should therefore also account not only for gestational week, but also for the number of miscarriages. Obviously, the topic of pregnancy loss is sensitive, and such questions in non-medical / non-risk-population surveys should be carefully phrased in order to avoid creating additional stress for the women affected. At the same time, our study based on the pairfam data demonstrates that it is possible to ask such questions, and that respondents are willing to answer and are capable of doing so. This gives these women an opportunity to express their experience and record an event in their reproductive career which is otherwise not acknowledged. It may well be that respondents feel frustrated

when they are asked repeatedly about their fertility intentions and births, but they have no occasion to report the loss of a pregnancy. Seen from a longer perspective, demographers are missing a part of the explanation for the gap which exists between the desired and realized number of children.

Considering the rising ages at birth, which is a risk factor for early pregnancy loss, our study investigated the effect of pregnancy loss on fertility intentions. As a miscarriage is an unintended spontaneous termination of a pregnancy it is also a termination of the transition to motherhood. The event becomes part of the woman's fertility history. Our analyses show that this event increases the short-term fertility intentions: after the pregnancy loss, the importance of fulfilling the desire to have a(nother) child as well as the plan to accomplish this within the next two years become stronger. Also, these results remain significant even with important control variables of the family context. In contrast, the ideal number of children as well as the realistic number of children do not differ after the event. Accordingly, the individual desired size of the family stays stable, but the intentions to fulfill them (soon) increase after a pregnancy loss.

We interpret the results as a grief response to the event of pregnancy loss. As a consequence, there should be more support from the health care service to help deal with such an experience (Coomarasamy et al., 2021) and mentally prepare women for a new pregnancy – if wanted. In addition, there should be education about how often miscarriages and other pregnancy losses occur, but also which factors increase the risk of such events. This might help miscarriages to lose their stigma and therefore encourage more women to seek help or to confide in people who could help them with their grief. In studies on the ideational dimension of fertility, different indicators should be included, as selecting only one may deliver biased results or reveal just one piece of a bigger picture.

Our study makes an important contribution to closing a gap in the fertility research, as it sheds light on a topic which affects many women, their partners and existing children. First, we focused on the effect of a pregnancy loss on women's life courses, hoping to draw attention to a topic which is barely recognized in demographic studies. Second, our study contributes to the literature on the ideational dimension of fertility. It demonstrates that (at least some of) the indicators vary across the life course. In sum, we show that critical live events like the loss of a pregnancy should be included in future research in order to shed light on reproductive events that are invisible in official and/ or demographic statistics and that may contribute to the currently lower-than-desired family sizes (Johnson et al., 2018). This includes data collections and analyses, because only few panel data in demographic and other social-science research allow such research questions at present. Third, and not least, miscarriages should receive more attention

from the reproductive health care services. Even though it may not be possible to influence the risk of having such an event, its effects on women's wellbeing and further family planning are treatable.

During the preparation of this work the authors used ChatGPT in order to improve language editing . After using this tool/service, the authors reviewed and edited the content as needed and take full responsibility for the content of the publication

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Appendix

Appendix 1: Construction of the analytic sample

Full sample:	Women who did not report a miscarriage (6797 persons with 40,302 person-years)	Women who report a miscarriage (332persons with 1553 person-years)
1st step: to exclude all persons-years since the second reported miscarriage		291 person-years excluded
2nd step: to exclude all person-years with a missing or non-ordinal value in any variable included in the models		
	Cases excluded (% of all person-years)	
Dependent variables		
Ideal number of children		
I don't know	650 (1.61)	10 (0.79)
No answer	93 (0.23)	3 (0.24)
Filter	651 (1.62)	38 (3.01)
Realistic number of children		
I'm not sure	2,255 (5.60)	131 (10.38)
I haven't thought about that yet	1,122 (2.78)	19 (1.51)
No Answer	154 (0.38)	3 (0.24)
Plans to have child next 2 years		
I don't know	96 (0.24)	0 (0)
I haven't thought about that yet	677 (1.68)	21 (1.66)
No Answer	22 (0.05)	2 (0.16)
Filter	2,377 (5.90)	64 (5.07)
Importance of having a child		
I don't know	54 (0.13)	2 (0.16)
No answer	49 (0.12)	2 (0.16)
Independent Variables		
Age	–	–
Number of children	–	–
Has a partner	34	0
Current pregnancy	699	23
Sample after 2nd step:	6,386 persons with 33,795 person-years	297 persons with 1,009 person-years
3rd step: to exclude all persons who reported a miscarriage in their first observation		70 person-years excluded
4th step: to exclude all persons that have only one observation	1470 persons excluded	
Analytical sample:	4,916 with 31,312 person-years	281 persons with 1,952 person-years

Data: calculations based on pairfam wave 1-11

Appendix 2: Linear Fixed Effects Regression models

	Ideal number of children					Realistic number of (additional) children					Plans to have a(nother) child within the next 2 years					Importance to have a(nother) child				
Models	A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	C1	C2	C3	C4	C5	D1	D2	D3	D4	D5
	b	b	b	b	b	b	b	b	b	b	b	b	b	b	b	b	b	b	b	b
	(RSE)	(RSE)	(RSE)	(RSE)	(RSE)	(RSE)	(RSE)	(RSE)	(RSE)	(RSE)	(RSE)	(RSE)	(RSE)	(RSE)	(RSE)	(RSE)	(RSE)	(RSE)	(RSE)	(RSE)
Pregnancy loss	0.06					-0.27 ***					-0.27 ***					0.01				
	0.03					0.04					0.08					0.11				
t1		0.06	0.06	0.04	0.01		-0.07	-0.04	0.02	0.03		0.22 *	0.26 **	0.30 ***	0.10		0.83 ***	0.88 ***	0.59 ***	0.37 *
		0.04	0.04	0.04	0.05		0.05	0.04	0.04	0.06		0.08	0.08	0.08	0.11		0.13	0.13	0.13	0.18
t2		0.06	0.01	0.00	0.09		-0.30 ***	-0.09	-0.04	-0.07		-0.34 ***	-0.03	0.01	-0.24		-0.28	0.10	-0.10	-0.41 *
		0.05	0.05	0.05	0.06		0.05	0.05	0.05	0.07		0.10	0.10	0.10	0.12		0.15	0.14	0.13	0.17
t3		0.05	-0.02	-0.03	0.01		-0.43 ***	-0.12 *	-0.08	-0.04		-0.69 ***	-0.22 *	-0.18 *	-0.43 ***		-0.60 ***	-0.03	-0.20	-0.45 **
		0.04	0.04	0.04	0.06		0.05	0.05	0.05	0.07		0.10	0.09	0.09	0.11		0.14	0.14	0.14	0.17
prev. childless * t1					0.06					-0.02					0.42 **					0.46
					0.07					0.08					0.15					0.26
prev. childless * t2					-0.20 *					0.06					0.54 **					0.68 **
					0.09					0.10					0.19					0.26
prev. Childless * t3					-0.09					-0.09					0.55 **					0.54 *
					0.08					0.10					0.18					0.26
number of children			0.13 ***	0.14 ***	0.14 ***			-0.56 ***	-0.63 ***	-0.63 ***			-0.84 ***	-0.89 ***	-0.89 ***			-1.02 ***	-0.74 ***	-0.73 ***
			0.01	0.02	0.02			0.02	0.02	0.02			0.03	0.03	0.03			0.05	0.05	0.05
pregnant				0.10 ***	0.10 ***				-0.43 ***	-0.43 ***				-0.35 ***	-0.35 ***				1.81 ***	1.81 ***
				0.02	0.02				0.03	0.03				0.05	0.05				0.08	0.08
had partner				0.02	0.02				0.06 ***	0.06 ***				0.23 ***	0.23 ***				0.17 ***	0.17 ***
				0.01	0.01				0.01	0.01				0.01	0.01				0.03	0.03
20-24	0.01	0.01	0.03	0.02	0.02	0.17 ***	0.17 ***	0.12 ***	0.10 ***	0.10 ***	0.34 ***	0.34 ***	0.26 ***	0.22 ***	0.22 ***	0.15 ***	0.14 ***	0.04	0.05	0.04
	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.04	0.04	0.04	0.04	0.04
25-29	0.05	0.05	0.06 *	0.06 *	0.06 *	0.22 ***	0.21 ***	0.13 ***	0.12 ***	0.12 ***	0.85 ***	0.84 ***	0.72 ***	0.69 ***	0.68 ***	0.43 ***	0.41 ***	0.27 ***	0.24 ***	0.24 ***
	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.04	0.04	0.04	0.04	0.04	0.07	0.07	0.07	0.06	0.06
30-34	0.04	0.04	0.03	0.02	0.02	-0.06	-0.07	-0.01	0.00	0.00	0.64 ***	0.63 ***	0.71 ***	0.70 ***	0.69 ***	0.46 ***	0.45 ***	0.55 ***	0.46 ***	0.45 ***
	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.03	0.03	0.03	0.06	0.06	0.05	0.05	0.05	0.09	0.09	0.09	0.09	0.09
35-39	0.03	0.03	-0.01	-0.02	-0.01	-0.23 ***	-0.23 ***	-0.05	-0.03	-0.02	0.16 *	0.16 *	0.44 ***	0.44 ***	0.44 ***	-0.04	-0.04	0.29 *	0.18	0.17
	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.04	0.04	0.04	0.07	0.07	0.07	0.07	0.07	0.12	0.12	0.12	0.12	0.12
40-44	-0.01	-0.01	-0.04	-0.05	-0.05	-0.22 ***	-0.22 ***	-0.08	-0.06	-0.06	-0.04	-0.04	0.18 *	0.19 **	0.19 **	-0.24	-0.23	0.03	-0.02	-0.02
	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.08	0.08	0.08	0.07	0.07	0.14	0.14	0.14	0.13	0.13
>45	-0.01	-0.01	-0.03	-0.03	-0.03	-0.08	-0.08	0.00	0.00	0.00	-0.11	-0.11	0.01	0.03	0.03	-0.26	-0.26	-0.11	-0.12	-0.11
	0.07	0.07	0.07	0.07	0.07	0.06	0.06	0.06	0.06	0.06	0.10	0.10	0.09	0.09	0.09	0.17	0.17	0.16	0.16	0.16
Constant	2.10 ***	2.10 ***	2.00 ***	1.98 ***	1.98 ***	1.20 ***	1.20 **	1.62 ***	1.64 ***	1.64 ***	0.24 ***	0.24 ***	0.88 ***	0.78 ***	0.78 ***	1.41 ***	1.41 ***	2.18 ***	1.88	1.88 ***
	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.04	0.04	0.04	0.05	0.05	0.07	0.07	0.08	0.08	0.08
N (observations)	33264	33264	33264	33264	33264	33264	33264	33264	33264	33264	33264	33264	33264	33264	33264	33264	33264	33264	33264	33264
N (individuals)	5197	5197	5197	5197	5197	5197	5197	5197	5197	5197	5197	5197	5197	5197	5197	5197	5197	5197	5197	5197
adj. within-R^2	0.00	0.00	0.01	0.01	0.01	0.15	0.15	0.24	0.25	0.25	0.09	0.10	0.20	0.22	0.22	0.04	0.05	0.09	0.14	0.14

Data: calculations based on pairfam wave 1-11

Note: *p < 0.05, **p < 0.01, ***p < 0.001; b-coefficients, RSE = Panel robust standard errors, all models are controlled by wave-dummy; t0= year before pregnancy loss (reference), t1=wave of reported pregnancy loss, t2=one wave after pregnancy loss was reported, t3= two or more waves after pregnancy loss was reported; prev. childless*tx = Interaction between status of mother before pregnancy loss and time after pregnancy loss.

Appendix 3: Linear Fixed Effects Regression models (mothers before pregnancy loss)

	Ideal number of children				Realistic number of (additional) children				Plans to have a(nother) child within the next 2 years				Importance to have a(nother) child			
Model	A1	A2	A3	A4	B1	B2	B3	B4	C1	C2	C3	C4	D1	D2	D3	D4
	b	b	b	b	b	b	b	b	b	b	b	b	b	b	b	b
	(RSE)	(RSE)	(RSE)	(RSE)	(RSE)	(RSE)	(RSE)	(RSE)	(RSE)	(RSE)	(RSE)	(RSE)	(RSE)	(RSE)	(RSE)	(RSE)
Pregnancy loss	0.10 *				-0.32 ***				-0.61 ***				-0.36 **			
	0.04				0.06				0.10				0.14			
t1		0.05	0.03	0.01		-0.13 *	-0.04	0.03		-0.09	0.05	0.10		0.53 **	0.70 ***	0.37 *
		0.05	0.05	0.05		0.07	0.06	0.06		0.12	0.12	0.11		0.17	0.17	0.18
t2		0.17 **	0.10	0.09		-0.40 ***	-0.11	-0.07		-0.70 ***	-0.27 *	-0.24		-0.73 ***	-0.22	-0.41 *
		0.06	0.06	0.06		0.07	0.07	0.07		0.13	0.13	0.12		0.18	0.17	0.17
t3		0.10	0.02	0.01		-0.44 ***	-0.07	-0.04		-0.99 ***	-0.45 ***	-0.43 ***		-0.95 ***	-0.31	-0.46 **
		0.05	0.05	0.06		0.07	0.07	0.07		0.12	0.11	0.11		0.18	0.17	0.17
number of children			0.13 ***	0.15 ***			-0.56 ***	-0.63 ***			-0.84 ***	-0.88 ***			-0.99 ***	-0.71 ***
			0.02	0.02			0.02	0.02			0.03	0.03			0.05	0.05
pregnant				0.11 ***				-0.41 ***				-0.31 ***				1.82 ***
				0.02				0.03				0.05				0.08
had partner				0.02				0.06 ***				0.22 ***				0.15 ***
				0.01				0.01				0.01				0.03
20-24	0.02	0.02	0.03	0.03	0.17 ***	0.17 ***	0.11 ***	0.10 ***	0.33 ***	0.32 ***	0.24 ***	0.21 ***	0.13 **	0.12 **	0.03	0.03
	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.04	0.04	0.04	0.04
25-29	0.05	0.05	0.06 *	0.06 *	0.21 ***	0.21 ***	0.13 ***	0.12 ***	0.83 ***	0.82 ***	0.71 ***	0.68 ***	0.38 ***	0.37 ***	0.24 ***	0.22 ***
	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.04	0.04	0.04	0.04	0.07	0.07	0.07	0.06
30-34	0.04	0.04	0.03	0.02	-0.08 *	-0.08 *	-0.02	-0.01	0.61 ***	0.60 ***	0.69 ***	0.68 ***	0.39 ***	0.37 ***	0.49 ***	0.40 ***
	0.04	0.04	0.04	0.04	0.04	0.04	0.03	0.03	0.06	0.06	0.05	0.05	0.09	0.09	0.09	0.09
35-39	0.03	0.03	-0.02	-0.02	-0.24 ***	-0.24 ***	-0.05	-0.03	0.15 *	0.15 *	0.43 ***	0.43 ***	-0.11	-0.12	0.22	0.12
	0.05	0.05	0.05	0.05	0.05	0.05	0.04	0.04	0.07	0.07	0.07	0.07	0.12	0.12	0.12	0.12
40-44	-0.02	-0.02	-0.05	-0.05	-0.22 ***	-0.22 ***	-0.07	-0.06	-0.03	-0.03	0.20 **	0.20 **	-0.29	-0.29 *	-0.03	-0.06
	0.06	0.06	0.06	0.06	0.05	0.05	0.05	0.05	0.08	0.08	0.08	0.07	0.14	0.14	0.14	0.13
>45	-0.02	-0.02	-0.04	-0.04	-0.09	-0.09	0.00	0.00	-0.10	-0.10	0.04	0.05	-0.32	-0.33	-0.17	-0.16
	0.07	0.07	0.07	0.07	0.06	0.06	0.06	0.06	0.10	0.10	0.09	0.09	0.17	0.17	0.16	0.16
Constant	2.11 ***	2.11 ***	2.01 ***	1.98 ***	1.19 ***	1.19 ***	1.63 ***	1.64 ***	0.23 ***	0.24 ***	0.88 ***	0.78 ***	1.44 ***	1.45 ***	2.21 ***	1.90 ***
	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.04	0.04	0.04	0.05	0.07	0.07	0.08	0.08
N (observations)	32373	32373	32373	32373	32373	32373	32373	32373	32373	32373	32373	32373	32373	32373	32373	32373
N (individuals)	5071	5071	5071	5071	5071	5071	5071	5071	5071	5071	5071	5071	5071	5071	5071	5071
adj. within-R^2	0.00	0.00	0.01	0.01	0.15	0.15	0.23	0.24	0.10	0.10	0.20	0.22	0.05	0.05	0.09	0.13

Data: calculations based on pairfam wave 1-11

Note: *p < 0.05, **p < 0.01, ***p < 0.001; b-coefficients, RSE = Panel robust standard errors, all models are controlled by wave-dummy; t0= year before pregnancy loss (reference), t1=wave of reported pregnancy loss, t2=one wave after pregnancy loss was reported, t3= two or more waves after pregnancy loss was reported.

Appendix 4: Linear Fixed Effects Regression models (childless before pregnancy loss)

	Ideal number of children				Realistic number of (additional) children				Plans to have a(nother) child within the next 2 years				Importance to have a(nother) child			
Model	A1	A2	A3	A4	B1	B2	B3	B4	C1	C2	C3	C4	D1	D2	D3	D4
	b	b	b	b	b	b	b	b	b	b	b	b	b	b	b	b
	(RSE)	(RSE)	(RSE)	(RSE)	(RSE)	(RSE)	(RSE)	(RSE)	(RSE)	(RSE)	(RSE)	(RSE)	(RSE)	(RSE)	(RSE)	(RSE)
Pregnancy loss	0.02				-0.21 ***				0.12				0.45 **			
	0.04				0.06				0.11				0.15			
t1		0.08	0.09	0.07		0.01	-0.04	0.02		0.57 ***	0.50 ***	0.52 ***		1.19 ***	1.10 ***	0.83 ***
		0.05	0.05	0.05		0.06	0.06	0.05		0.11	0.11	0.10		0.20	0.19	0.19
t2		-0.07	-0.09	-0.11		-0.16 *	-0.05	0.00		0.11	0.27	0.31 *		0.29	0.49 *	0.28
		0.07	0.07	0.07		0.08	0.07	0.07		0.15	0.15	0.15		0.23	0.22	0.20
t3		-0.01	-0.07	-0.08		-0.44 ***	-0.17 *	-0.12		-0.31 *	0.10	0.15		-0.17	0.33	0.12
		0.06	0.06	0.06		0.09	0.07	0.07		0.15	0.14	0.14		0.22	0.21	0.21
number of children			0.13 ***	0.14 ***			-0.57 ***	-0.64 ***			-0.86 ***	-0.91 ***			-1.05 ***	-0.77 ***
			0.02	0.02			0.02	0.02			0.03	0.03			0.05	0.05
pregnant				0.11 ***				-0.44 ***				-0.35 ***				1.84 ***
				0.02				0.03				0.05				0.08
had partner				0.02				0.06 ***				0.22 ***				0.16 ***
				0.01				0.01				0.01				0.03
20-24	0.01	0.01	0.03	0.03	0.17 ***	0.17 ***	0.11 ***	0.10 ***	0.34 ***	0.33 ***	0.25 ***	0.22 ***	0.15 ***	0.14 ***	0.04	0.04
	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.04	0.04	0.04	0.04
25-29	0.05	0.05	0.07	0.07 *	0.22 ***	0.22 ***	0.14 ***	0.13 ***	0.84 ***	0.83 ***	0.71 ***	0.68 ***	0.42 ***	0.41 ***	0.26 ***	0.23 ***
	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.04	0.04	0.04	0.04	0.07	0.07	0.07	0.07
30-34	0.04	0.04	0.03	0.02	-0.06	-0.06	-0.01	0.00	0.62 ***	0.62 ***	0.69 ***	0.68 ***	0.44 ***	0.44 ***	0.53 ***	0.43 ***
	0.04	0.04	0.04	0.04	0.04	0.04	0.03	0.03	0.06	0.06	0.05	0.05	0.09	0.09	0.09	0.09
35-39	0.04	0.04	0.00	-0.01	-0.22 ***	-0.22 ***	-0.04	-0.02	0.15 *	0.15 *	0.42 ***	0.43 ***	-0.04	-0.03	0.30 *	0.18
	0.05	0.05	0.05	0.05	0.05	0.05	0.04	0.04	0.07	0.07	0.07	0.07	0.12	0.12	0.12	0.12
40-44	-0.01	-0.01	-0.04	-0.04	-0.22 ***	-0.21 ***	-0.07	-0.05	-0.05	-0.04	0.17 *	0.19 *	-0.22	-0.21	0.06	0.00
	0.06	0.06	0.06	0.06	0.05	0.05	0.05	0.05	0.08	0.08	0.08	0.07	0.14	0.14	0.14	0.14
>45	0.00	0.00	-0.02	-0.02	-0.08	-0.08	0.00	0.02	-0.12	-0.12	0.00	0.02	-0.23	-0.23	-0.08	-0.10
	0.07	0.07	0.07	0.07	0.06	0.06	0.06	0.06	0.10	0.10	0.09	0.09	0.17	0.17	0.16	0.16
Constant	2.09 ***	2.09 ***	1.99 ***	1.97 ***	1.20 ***	1.19 ***	1.63 ***	1.64 ***	0.23 ***	0.23 ***	0.87 ***	0.78 ***	1.39 ***	1.39 ***	2.18 ***	1.89 ***
	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.04	0.04	0.04	0.05	0.07	0.07	0.08	0.08
N (observations)	32203	32203	32203	32203	32203	32203	32203	32203	32203	32203	32203	32203	32203	32203	32203	32203
N (individuals)	5042	5042	5042	5042	5042	5042	5042	5042	5042	5042	5042	5042	5042	5042	5042	5042
adj. within-R^2	0	0	0.01	0.01	0.14	0.14	0.23	0.24	0.09	0.09	0.2	0.21	0.04	0.05	0.09	0.13

Data: calculations based on pairfam wave 1-11

Note: *p < 0.05, **p < 0.01, ***p < 0.001; b-coefficients, RSE = Panel robust standard errors, all models are controlled by wave-dummy; t0= year before pregnancy loss (reference), t1=wave of reported pregnancy loss, t2=one wave after pregnancy loss was reported, t3= two or more waves after pregnancy loss was reported

Appendix 5: Linear fixed effects model with three variables for the event of pregnancy loss

	Ideal number of children		Realistic number of (additional) children		Intentions to have a(nother) child within next 2 years		Importance to have a(nother) child	
	B	b	b	b	b	b	b	b
	(RSE)	(RSE)	(RSE)	(RSE)	(RSE)	(RSE)	(RSE)	(RSE)
Pregnancy loss (dummy)	0.09	0.08	-0.07	0.05	0.50***	0.49***	0.99***	0.67***
	0.05	0.05	0.06	0.05	0.11	0.10	0.17	0.17
Years after pregnancy loss	-0.03	-0.05	-0.26***	-0.07*	-0.45***	-0.22***	-0.67***	-0.30***
	0.03	0.03	0.03	0.03	0.06	0.05	0.10	0.08
Years after pregnancy loss	0.00	0.00	0.02***	0.01*	0.03***	0.02***	0.04***	0.02*
squared	0.00	0.00	0.00	0.00	0.01	0.00	0.01	0.01
Currently pregnant		0.10***		-0.46***		-0.32***		1.75***
		0.02		0.03		0.05		0.08
Number of children		0.13***		-0.67***		-0.87***		-0.83***
		0.01		0.02		0.03		0.05
Have a partner (dummy)		0.02		0.05***		0.25***		0.14***
		0.01		0.01		0.01		0.03
Age group (ref. < 20)								
20-29		0.00		-0.03		0.43***		-0.14***
		0.01		0.01		0.02		0.03
30-39		-0.07***		-0.27***		0.50***		-0.16**
		0.02		0.02		0.03		0.05
>40		-0.13***		-0.43***		0.33***		-0.60***
		0.02		0.02		0.04		0.06
Constant	2.12***	2.03***	0.93***	1.75***	0.51***	0.82***	1.05***	1.93***
	0.00	0.02	0.00	0.02	0.00	0.03	0.00	0.06
N (observations)	33264	33264	33264	33264	33264	33264	33264	33264
n (individuals)	5197	5197	5197	5197	5197	5197	5197	5197
adj. within-R^2	0.00	0.01	0.03	0.24	0.02	0.19	0.01	0.12

Data: calculations based on pairfam wave 1-11

Note: *p < 0.05, **p < 0.01, ***p < 0.001; b-coefficients, RSE = Panel robust standard errors, all models are controlled by wave-dummy

Appendix 6: linear fixed effect regression (sample withouth person-years where women reported a pregnancy)

	Ideal number of children					Realistic number of (additional) children					Plans to have a(nother) child within the next 2 years					Importance to have a(nother) child				
Models	A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	C1	C2	C3	C4	C5	D1	D2	D3	D4	D5
	b (RSE)	b (RSE)	b (RSE)	b (RSE)	b (RSE)	b (RSE)	b (RSE)	b (RSE)	b (RSE)	b (RSE)	b (RSE)	b (RSE)	b (RSE)	b (RSE)	b (RSE)	b (RSE)	b (RSE)	b (RSE)	b (RSE)	b (RSE)
Pregnancy loss	0.05					-0.26 ***					-0.26 ***					-0.13				
	0.03					0.04					0.08					0.11				
t1		0.07	0.06	0.06	0.04		0.00	0.04	0.04	-0.01		0.34 ***	0.40 ***	0.38 ***	0.15		0.72 ***	0.77 ***	0.76 ***	0.62 ***
		0.04	0.04	0.04	0.06		0.05	0.04	0.04	0.06		0.08	0.08	0.08	0.11		0.14	0.14	0.14	0.19
t2		0.05	-0.02	-0.02	0.08		-0.30 ***	-0.04	-0.04	-0.05		-0.32 **	0.06	0.05	-0.20		-0.41 **	-0.09	-0.09	-0.32
		0.05	0.05	0.05	0.06		0.05	0.05	0.05	0.07		0.11	0.10	0.10	0.13		0.13	0.13	0.13	0.17
t3		0.04	-0.04	-0.04	0.00		-0.43 ***	-0.08	-0.08	-0.05		-0.68 ***	-0.18	-0.17	-0.43 ***		-0.64 ***	-0.21	-0.21	-0.47 **
		0.04	0.04	0.04	0.06		0.06	0.05	0.05	0.07		0.10	0.09	0.09	0.11		0.14	0.14	0.14	0.16
prev. childless * t1					0.05					0.09					0.48 **					0.30
					0.08					0.08					0.15					0.28
prev. childless * t2					-0.21 *					0.04					0.54 **					0.50
					0.10					0.10					0.20					0.26
prev. childless * t3					-0.08					-0.07					0.56 **					0.60 *
					0.08					0.10					0.18					0.27
number of children			0.14 ***	0.14 ***	0.14 ***			-0.62 ***	-0.62 ***	-0.62 ***			-0.89 ***	-0.89 ***	-0.88 ***			-0.76 ***	-0.76 ***	-0.76 ***
			0.02	0.02	0.02			0.02	0.02	0.02			0.03	0.03	0.03			0.05	0.05	0.05
had partner				0.02	0.02				0.06 ***	0.06 ***				0.23 ***	0.23 ***				0.17 ***	0.17 ***
				0.01	0.01				0.01	0.01				0.01	0.01				0.02	0.02
20-24	0.01	0.01	0.03	0.02	0.02	0.17 ***	0.16 ***	0.11 ***	0.10 ***	0.10 ***	0.32 ***	0.32 ***	0.24 ***	0.21 ***	0.21 ***	0.15 ***	0.14 ***	0.07	0.05	0.04
	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.04	0.04	0.04	0.04	0.04
25-29	0.05	0.05	0.06 *	0.06 *	0.06 *	0.22 ***	0.21 ***	0.14 ***	0.13 ***	0.13 ***	0.83 ***	0.82 ***	0.70 ***	0.67 ***	0.67 ***	0.35 ***	0.34 ***	0.24 ***	0.22 ***	0.21 ***
	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.04	0.04	0.04	0.04	0.04	0.07	0.07	0.06	0.06	0.06
30-34	0.04	0.04	0.02	0.02	0.02	-0.05	-0.06	0.01	0.00	0.00	0.64 ***	0.63 ***	0.72 ***	0.70 ***	0.69 ***	0.40 ***	0.40 ***	0.48 ***	0.46 ***	0.45 ***
	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.03	0.03	0.03	0.05	0.05	0.05	0.05	0.05	0.09	0.09	0.09	0.09	0.09
35-39	0.02	0.02	-0.02	-0.02	-0.02	-0.22 ***	-0.22 ***	-0.02	-0.02	-0.02	0.17 *	0.17 *	0.46 ***	0.45 ***	0.44 ***	-0.09	-0.08	0.17	0.16	0.15
	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.04	0.04	0.04	0.07	0.07	0.07	0.07	0.07	0.12	0.12	0.12	0.12	0.12
40-44	-0.02	-0.02	-0.05	-0.05	-0.05	-0.22 ***	-0.21 ***	-0.06	-0.06	-0.05	-0.04	-0.04	0.19 *	0.19 **	0.19 **	-0.24	-0.23	-0.03	-0.03	-0.03
	0.06	0.06	0.06	0.06	0.06	0.05	0.05	0.05	0.05	0.05	0.08	0.08	0.07	0.07	0.07	0.14	0.13	0.13	0.13	0.13
>45	-0.02	-0.02	-0.04	-0.04	-0.04	-0.08	-0.08	0.01	0.01	0.02	-0.12	-0.11	0.02	0.04	0.04	-0.26	-0.25	-0.14	-0.12	-0.12
	0.07	0.07	0.07	0.07	0.07	0.06	0.06	0.06	0.06	0.06	0.10	0.10	0.09	0.09	0.09	0.16	0.16	0.16	0.16	0.16
Constant	2.10 ***	2.10 ***	1.99 ***	1.98 ***	1.98 ***	1.19 ***	1.19 ***	1.66 ***	1.62 ***	1.62 ***	0.23 ***	0.23 ***	0.89 ***	0.76 ***	0.76 ***	1.42 ***	1.42 ***	1.99 ***	1.89 ***	1.89 ***
	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.04	0.04	0.04	0.05	0.05	0.07	0.07	0.08	0.08	0.08
n (observations)	32475	32475	32475	32475	32475	32475	32475	32475	32475	32475	32475	32475	32475	32475	32475	32475	32475	32475	32475	32475
N (individuals)	5163	5163	5163	5163	5163	5163	5163	5163	5163	5163	5163	5163	5163	5163	5163	5163	5163	5163	5163	5163
adj. within-R^2	0.00	0.00	0.01	0.01	0.01	0.14	0.14	0.24	0.24	0.24	0.09	0.10	0.21	0.22	0.22	0.05	0.05	0.08	0.08	0.08

Data: calculations based on pairfam wave 1-11

Note: *p < 0.05, **p < 0.01, ***p < 0.001; b-coefficients, RSE = Panel robust standard errors, all models are controlled by wave-dummy; t0= year before pregnancy loss (reference), t1=wave of reported pregnancy loss, t2=one wave after pregnancy loss was reported, t3= two or more waves after pregnancy loss was reported; prev. childless*tx = Interaction between status of mother before pregnancy loss and time after pregnancy loss.

Appendix 7: linear regression models for birth cohort 1991-1993 (N_event: 55)

	Ideal number of children					Realistic number of (additional) children					Plans to have a(nother) child within the next 2 years					Importance to have a(nother) child				
Models	A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	C1	C2	C3	C4	C5	D1	D2	D3	D4	D5
	b	b	b	b	b	b	b	b	b	b	b	b	b	b	b	b	b	b	b	b
	(RSE)	(RSE)	(RSE)	(RSE)	(RSE)	(RSE)	(RSE)	(RSE)	(RSE)	(RSE)	(RSE)	(RSE)	(RSE)	(RSE)	(RSE)	(RSE)	(RSE)	(RSE)	(RSE)	(RSE)
Pregnancy loss	0.02					-0.21 *					0.38 **					0.48 *				
	0.08					0.09					0.13					0.19				
t1		0.14	0.11	0.10	0.34 *		-0.11	0.02	0.09	0.53 *		0.66 ***	0.72 ***	0.70 ***	0.21		0.83 **	0.83 **	0.52 *	0.59
		0.08	0.08	0.08	0.16		0.08	0.08	0.08	0.26		0.17	0.16	0.16	0.44		0.28	0.28	0.24	0.58
t2		-0.04	-0.09	-0.09	0.39		-0.26	-0.01	0.03	0.56		0.23	0.33	0.34	0.57		-0.05	-0.05	-0.20	-0.14
		0.14	0.14	0.14	0.30		0.13	0.15	0.15	0.42		0.21	0.21	0.21	0.57		0.24	0.24	0.23	0.47
t3		-0.13	-0.19 *	-0.19 *	0.22		-0.32	0.01	0.07	0.20		0.06	0.19	0.22	-0.75		0.35	0.35	0.18	0.05
		0.09	0.09	0.10	0.19		0.17	0.13	0.12	0.24		0.20	0.19	0.19	0.38		0.31	0.31	0.31	0.28
prev. childless * t1					-0.30					-0.53					0.59					-0.08
					0.18					0.27					0.47					0.64
prev. childless* t2					-0.59					-0.67					-0.31					-0.07
					0.34					0.44					0.61					0.54
prev. childless * t3					-0.46 *					-0.15					1.06 *					0.14
					0.21					0.27					0.42					0.43
number of children			0.13 ***	0.14 ***	0.13 **			-0.72 ***	-0.77 ***	-0.78 ***			-0.29 ***	-0.28 ***	-0.27 ***			-0.01	0.20	0.20
			0.04	0.04	0.04			0.04	0.04	0.04			0.06	0.07	0.07			0.12	0.12	0.12
pregnant				0.13 *	0.13 *				-0.61 ***	-0.61 ***				0.04	0.04				2.53 ***	2.52 ***
				0.06	0.06				0.08	0.08				0.10	0.10				0.20	0.20
had partner				0.03 *	0.03 *				0.05 ***	0.05 ***				0.17 ***	0.17 ***				0.14 ***	0.14 ***
				0.01	0.01				0.01	0.01				0.02	0.02				0.03	0.03
20-24	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.04	0.04	0.04	-0.02	-0.03	-0.02	-0.02	-0.03	-0.03	-0.03	-0.03	-0.03	-0.03
	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.03	0.03	0.02	0.02	0.02	0.05	0.05	0.05	0.05	0.05
25-29	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.06	0.06	0.06	0.09	0.09	0.10	0.11 *	0.11 *	-0.02	-0.02	-0.02	-0.02	-0.02
	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.05	0.05	0.05	0.05	0.05	0.09	0.09	0.09	0.08	0.08
Constant	2.11 ***	2.11 ***	2.11 ***	2.10 ***	2.10 ***	1.92 ***	1.92 ***	1.92 ***	1.90 ***	1.90 ***	0.08 ***	0.08 ***	0.08 ***	0.03 *	0.03 *	1.28 ***	1.28 ***	1.28 ***	1.24 ***	1.24 ***
	0.01	0.01	0.01	0.02	0.02	0.02	0.02	0.01	0.02	0.02	0.01	0.01	0.01	0.01	0.01	0.03	0.03	0.03	0.04	0.04
n (observations)	10637	10637	10637	10637	10637	10637	10637	10637	10637	10637	10637	10637	10637	10637	10637	10637	10637	10637	10637	10637
N (individuals)	1688	1688	1688	1688	1688	1688	1688	1688	1688	1688	1688	1688	1688	1688	1688	1688	1688	1688	1688	1688
adj. within-R^2	0	0	0.01	0.01	0.01	0.02	0.02	0.08	0.09	0.09	0.21	0.21	0.22	0.23	0.23	0.03	0.03	0.03	0.09	0.09

Data: calculations based on pairfam wave 1-11

Note: *p < 0.05, **p < 0.01, ***p < 0.001; b-coefficients, RSE = Panel robust standard errors, all models are controlled by wave-dummy; t0= year before pregnancy loss (reference), t1=wave of reported pregnancy loss, t2=one wave after pregnancy loss was reported, t3= two or more waves after pregnancy loss was reported; prev. childless*tx = Interaction between status of mother before pregnancy loss and time after pregnancy loss.

Appendix 8: linear regression models for birth cohort 1981-1983 (N_event: 143)

	Ideal number of children					Realistic number of (additional) children					Plans to have a(nother) child within the next 2 years					Importance to have a(nother) child				
Models	A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	C1	C2	C3	C4	C5	D1	D2	D3	D4	D5
	b	b	b	b	b	b	b	b	b	b	b	b	b	b	b	b	b	b	b	b
	(RSE)	(RSE)	(RSE)	(RSE)	(RSE)	(RSE)	(RSE)	(RSE)	(RSE)	(RSE)	(RSE)	(RSE)	(RSE)	(RSE)	(RSE)	(RSE)	(RSE)	(RSE)	(RSE)	(RSE)
Pregnancy loss	0.06					-0.21 ***					-0.26 *					0.13				
	0.04					0.06					0.11					0.15				
t1		0.02	0.03	0.00	-0.03		0.01	-0.01	0.09	0.08		0.23	0.19	0.30 **	0.26		1.18 ***	1.13 ***	0.74 ***	0.51 *
		0.05	0.05	0.05	0.07		0.07	0.07	0.06	0.08		0.12	0.12	0.11	0.16		0.19	0.19	0.20	0.26
t2		0.11	0.05	0.04	0.05		-0.26 ***	-0.01	0.04	0.01		-0.46	-0.03	0.02	-0.18		-0.24	0.30	0.08	-0.33
		0.06	0.06	0.06	0.09		0.07	0.06	0.06	0.08		0.15	0.14	0.13	0.15		0.25	0.22	0.21	0.27
t3		0.06	-0.02	-0.03	-0.06		-0.38 ***	-0.03	0.01	0.08		-0.61	0.00	0.04	-0.22		-0.65 **	0.11	-0.06	-0.41
		0.05	0.05	0.06	0.08		0.07	0.07	0.07	0.09		0.14	0.12	0.12	0.15		0.20	0.20	0.19	0.26
prev. childless * t1					0.08					0.02					0.09					0.54
					0.10					0.12					0.21					0.40
prev. childless * t2					-0.02					0.08					0.44					0.88 *
					0.12					0.11					0.27					0.40
prev. childless * t3					0.06					-0.15					0.53 *					0.73 *
					0.10					0.13					0.22					0.34
number of children			0.13 ***	0.15 ***	0.15 ***			-0.54 ***	-0.61 ***	-0.61 ***			-0.95 ***	-1.03 ***	-1.03 ***			-1.19 ***	-0.93 ***	-0.92 ***
			0.02	0.02	0.02			0.02	0.02	0.02			0.03	0.03	0.03			0.06	0.06	0.06
pregnant				0.09 ***	0.09 ***				-0.46 ***	-0.45 ***				-0.55 ***	-0.55 ***				1.58 ***	1.58 ***
				0.02	0.02				0.03	0.03				0.06	0.06				0.09	0.09
had partner				0.03	0.03				0.10 ***	0.10 ***				0.45 ***	0.45 ***				0.40 ***	0.40 ***
				0.03	0.03				0.03	0.03				0.04	0.04				0.07	0.07
30-34	-0.02	-0.02	-0.02	-0.02	-0.02	-0.06 *	-0.06 *	-0.05 *	-0.05 *	-0.05 *	-0.01	-0.01	0.00	0.00	0.00	0.06	0.07	0.08	0.08	0.08
	0.02	0.02	0.02	0.02	0.02	0.03	0.03	0.02	0.02	0.02	0.05	0.05	0.04	0.04	0.04	0.08	0.08	0.08	0.07	0.07
35-39	0.00	0.00	-0.01	-0.01	-0.01	-0.01	-0.01	0.02	0.02	0.02	-0.19 *	-0.19 *	-0.13	-0.13	-0.13	-0.19	-0.19	-0.12	-0.12	-0.12
	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.08	0.08	0.07	0.07	0.07	0.13	0.13	0.12	0.12	0.12
Constant	2.15 ***	2.15 ***	2.06 ***	2.02 ***	2.02 ***	1.36 ***	1.37 ***	1.73 ***	1.71 ***	1.71 ***	1.23 ***	1.23 ***	1.88 ***	1.58 ***	1.58 ***	1.94 ***	1.94 ***	2.74 ***	2.24 ***	2.24 ***
	0.02	0.02	0.02	0.03	0.03	0.02	0.02	0.02	0.03	0.03	0.03	0.03	0.04	0.05	0.05	0.05	0.05	0.07	0.09	0.09
n (observations)	9791	9791	9791	9791	9791	9791	9791	9791	9791	9791	9791	9791	9791	9791	9791	9791	9791	9791	9791	9791
N (individuals)	1615	1615	1615	1615	1615	1615	1615	1615	1615	1615	1615	1615	1615	1615	1615	1615	1615	1615	1615	1615
adj. within-R^2	0	0	0.02	0.02	0.02	0.29	0.3	0.41	0.43	0.44	0.07	0.08	0.23	0.26	0.27	0.04	0.05	0.13	0.19	0.19

Data: calculations based on pairfam wave 1-11

Note: *p < 0.05, **p < 0.01, ***p < 0.001; b-coefficients, RSE = Panel robust standard errors, all models are controlled by wave-dummy; t0= year before pregnancy loss (reference), t1=wave of reported pregnancy loss, t2=one wave after pregnancy loss was reported, t3= two or more waves after pregnancy loss was reported; prev. childless*tx = Interaction between status of mother before pregnancy loss and time after pregnancy loss.

Appendix 9: linear regression models for birth cohort 1971-1973 (N_event: 83)

	Ideal number of children					Realistic number of (additional) children					Plans to have a(nother) child within the next 2 years					Importance to have a(nother) child				
Models	A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	C1	C2	C3	C4	C5	D1	D2	D3	D4	D5
	b	b	b	b	b	b	b	b	b	b	b	b	b	b	b	b	b	b	b	b
	(RSE)	(RSE)	(RSE)	(RSE)	(RSE)	(RSE)	(RSE)	(RSE)	(RSE)	(RSE)	(RSE)	(RSE)	(RSE)	(RSE)	(RSE)	(RSE)	(RSE)	(RSE)	(RSE)	(RSE)
Pregnancy loss	0.1					-0.31 ***					-0.67 ***					-0.52 **				
	0.06					0.08					0.14					0.19				
t1		0.09	0.08	0.09	0.04		-0.08	-0.08	-0.08	-0.08		-0.14	-0.12	-0.13	-0.15		0.18	0.2	0.16	0.1
		0.07	0.07	0.07	0.08		0.08	0.08	0.08	0.09		0.14	0.14	0.13	0.16		0.21	0.2	0.21	0.24
t2		0.07	0.04	0.04	0.11		-0.3 ***	-0.22 **	-0.21 *	-0.25 ***		-0.54 ***	-0.37 *	-0.36 *	-0.43 **		-0.57 **	-0.32	-0.45 *	-0.51 *
		0.08	0.08	0.08	0.08		0.08	0.08	0.08	0.09		0.16	0.15	0.15	0.16		0.21	0.2	0.21	0.21
t3		0.12	0.07	0.06	0.07		-0.46 ***	-0.29 ***	-0.28 ***	-0.23 *		-1.06 ***	-0.71 ***	-0.69 ***	-0.54 **		-0.95 ***	-0.42	-0.56 *	-0.37
		0.07	0.07	0.07	0.08		0.09	0.09	0.09	0.1		0.17	0.16	0.16	0.17		0.24	0.23	0.24	0.24
prev. childless * t1					0.2					-0.01					0.01					0.18
					0.19					0.17					0.28					0.48
prev. childless * t2					-0.43 *					0.14					0.2					0.12
					0.21					0.21					0.31					0.64
prev. childless * t3					-0.11					-0.3					-0.94 **					-1.16
					0.19					0.2					0.35					0.68
number of children			0.12 ***	0.15 ***	0.15 ***			-0.44 ***	-0.45 ***	-0.45 ***			-0.89 ***	-0.93 ***	-0.93 ***			-1.33 ***	-1.02 ***	-1.02 ***
			0.04	0.04	0.04			0.04	0.04	0.04			0.07	0.08	0.08			0.11	0.11	0.11
pregnant				0.13 **	0.13 **				-0.06	-0.06				-0.18	-0.18				1.56 ***	1.57 ***
				0.05	0.05				0.07	0.07				0.13	0.13				0.21	0.21
had partner				-0.04	-0.04				0.01	0.01				0.09 **	0.09 **				0	-0.01
				0.03	0.03				0.02	0.02				0.03	0.03				0.05	0.05
30-34	-0.03	-0.03	-0.03	-0.03	-0.03	-0.03 *	-0.03 *	-0.03 *	-0.03 *	-0.03 *	-0.05 *	-0.05 **	-0.05 **	-0.05 **	-0.05 **	-0.07	-0.07	-0.06	-0.04	-0.04
	0.02	0.02	0.02	0.02	0.02	0.01	0.01	0.01	0.01	0.01	0.02	0.02	0.02	0.02	0.02	0.05	0.05	0.05	0.04	0.04
35-39	-0.04	-0.04	-0.03	-0.03	-0.03	-0.02	-0.02	-0.03	-0.03	-0.03	-0.01	-0.01	-0.03	-0.03	-0.03	-0.05	-0.06	-0.09	-0.07	-0.07
	0.04	0.04	0.04	0.04	0.04	0.02	0.02	0.02	0.02	0.02	0.03	0.03	0.03	0.03	0.03	0.07	0.07	0.07	0.07	0.07
Constant	2.13 ***	2.13 ***	1.92 ***	1.91 ***	1.91 ***	0.43 ***	0.43 ***	1.15 ***	1.16 ***	1.16 ***	0.43 ***	0.43 ***	1.9 ***	1.88 ***	1.88 ***	1.39 ***	1.39 ***	3.59 ***	3.07 ***	3.07 ***
	0.02	0.02	0.06	0.07	0.07	0.02	0.02	0.07	0.08	0.08	0.02	0.02	0.13	0.14	0.14	0.04	0.04	0.19	0.2	0.2
n (observations)	12836	12836	12836	12836	12836	12836	12836	12836	12836	12836	12836	12836	12836	12836	12836	12836	12836	12836	12836	12836
N (individuals)	1894	1894	1894	1894	1894	1894	1894	1894	1894	1894	1894	1894	1894	1894	1894	1894	1894	1894	1894	1894
adj. within-R^2	0	0	0.01	0.01	0.01	0.13	0.14	0.18	0.18	0.18	0.1	0.11	0.22	0.22	0.23	0.08	0.09	0.13	0.14	0.14

Data: calculations based on pairfam wave 1-11

Note: *p < 0.05, **p < 0.01, ***p < 0.001; b-coefficients, RSE = Panel robust standard errors, all models are controlled by wave-dummy; t0= year before pregnancy loss (reference), t1=wave of reported pregnancy loss, t2=one wave after pregnancy loss was reported, t3= two or more waves after pregnancy loss was reported; prev. childless*tx = Interaction between status of mother before pregnancy loss and time after pregnancy loss.