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Master Thesis:

Gender Equality and Male-Body Based Contraceptive Use: Evidence from the German Family Panel

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List of abbreviations

%	–	Percent
#	–	Interaction
BZgA	–	Bundeszentrale für gesundheitliche Aufklärung [Federal Centre for Health Education]
FRG	–	Federal Republic Germany
Freq.	–	Frequency
GDR	–	German Democratic Republic
ISCED-97	–	International Standard Classification of Education 1997
IUD	–	Intra-Uterine Device
LARC	–	Long Acting Reversible Contraception
LGBTQIA+	–	Lesbian Gay Bi Trans Queer Inter Asexual/Aromantic/Agender
LR test	–	Likelihood Ratio test
Obs.	–	Observations
OLS	–	Ordinary Least Squares
Pairfam	–	Panel Analysis of Intimate Relationships and Family Dynamics
SRHR	–	Sexual and Reproductive Health and Rights
STD	–	Sexually Transmittable Disease
Std. Dev.	–	Standard Deviation
UN	–	United Nations
US	–	United States of America
WHO	–	World Health Organisation

Abstract

Background Most available modern contraceptives are female-body based and women predominantly take the responsibility for birth control in heterosexual relationships in developed countries. As preventing unwanted pregnancies is a 'relationship task' both partners want to achieve in heterosexual relationships, feminized contraceptive responsibility can be conceptualised as 'fertility work'. Thereby, it can be connected to the 'gendered division of labour'. **Objective** By examining the gendered dimension of contraceptive behaviour, I address the research gap of considering micro-level gender equality in form of power dynamics and gender ideology when researching couples' contraceptive choices. It is hypothesized that greater gender equality is related to a higher likelihood of choosing modern methods over no or traditional methods, and modern male methods over modern female methods. Thereby, it is assumed that modern male methods are connected to lower expenditures like side-effects than female methods and that using male methods can be conceptualised as 'sharing' contraceptive responsibility. **Method** Micro-level gender equality is operationalised within power theories and gender ideology theory and measured by predictors of interactional, relative and absolute power and gender ideology. I test each predictor in their relationship to contraceptive behaviour in linear probability models with wave 1 data of the German Family Panel 'pairfam'. **Findings** Gender equality conceptualised within power theories and gender ideology theory is significantly associated with a higher probability of choosing modern methods over no or traditional methods, and choosing modern male methods over modern female methods. Thereby, broader relationship dynamics like the number of children, relationship commitment and cohort affiliation need to be taken into account.

Keywords: Gender Equality, Contraceptive Behaviour, Modern Contraception, Male-Body Based Contraceptives, Gendered Division of Labour, Power Theories, Gender Ideology Theory

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1. Introduction

1.1. Problem Statement

Since the development of the birth control pill in the 1960s, a broad variety of modern contraceptive methods has been developed. As can be seen in table 1, there are only two modern male[1]-body based methods, namely condoms[2] and vasectomy, whilst modern female-body based methods consist of multiple options (WHO, 2018). Simultaneously to the majority of modern contraceptives being female-body based, women have the main responsibility to prevent unwanted pregnancies by using birth control in developed countries (Bertotti, 2013; Fennell, 2011). This process has especially been connected to the development of the pill and called the *feminization of contraception* (Kimport, 2018a). One reason for this gendered responsibility can be found in biotechnology: women are the ones bearing children which makes them physically more affected by pregnancy and socially more responsible for the child than men: "if a woman carries a pregnancy to term and does not have a stable partner, they also usually end up primarily supporting and caring for the unintended child" (Fennell, 2011, p. 497). Hence, women's opportunity costs of an unwanted pregnancy are higher than men's which makes prevention more relevant for them. Another reason for women taking the main contraceptive responsibility could be that most modern female-body based contraceptives are more effective than male reversible methods (Dereuddre et al., 2016a). However, cost-risk-calculations and effectiveness are not the only factors influencing the choice of birth control, which can be seen when looking at sterilization. Female sterilization is globally significantly more common than male sterilization, even though both methods are similarly effective and female sterilization is connected to higher financial costs and physical complications (Shih et al., 2011). "This suggests that contraceptive behaviour is also a social practice, shaped by complex interactions between (gendered) roles and responsibilities" (Dereuddre et al., 2016a, p. 1). This assumption is supported by the fact that in many developed countries contraceptive behaviour differs significantly (Dereuddre et al., 2016b). Hence, it is still unclear which mechanisms lead men or women to take contraceptive responsibility besides biotechnology and effectiveness (Dereuddre et al., 2017).

Table 1: Contraceptive methods (WHO, 2018); own representation

	Traditional Methods	**Modern Methods**
Male-Body Based	Withdrawal Abstinence	Short-Term Reversible *Barrier Methods*: Condom Long-Term Reversible/Permanent *Sterilization:* Vasectomy
Female-Body Based	*Fertility-Awareness Based Methods:* Rhythm Method, Calendar Method, Lactational Amenorrhea Method, Abstinence	Short-Term Reversible *Hormonal/Medication-Based Methods:* Birth Control Pill, Vaginal Ring, Patch, Spermicides, Emergency Contraception *Barrier Methods:* Female Condom, Diaphragm, Cervical Cap, Sponge Long-Term Reversible /Permanent *Medication Based Methods:* IUDs, Injectables, Implants *Sterilization:* Tubal Ligation, Hysterectomy

[1] Whilst it is recognized that not everybody having a uterus identifies as female/woman and not everyone having a penis identifies as male/man, those two binary categories will be used in the following as most previous research has focused on the same categories. There is a need for further research addressing contraceptive behaviour and division of labour in LGBTQIA+ relationships.

[2] In the following 'condom' always refers to male condoms, as female condoms are less common, more expensive and harder to access.

When considering mechanisms of couples' contraceptive behaviour, advantages and disadvantages of holding contraceptive responsibility need to be considered. Whilst having the opportunity to use contraceptives on the own body is widely seen as liberating from the sexual partners preferences especially for women (Bentley & Kavanagh, 2008) and can be identified as a way of holding control (Dereuddre et al., 2017), it is also connected to some kind of expenditures (Kimport, 2018b). Out of the available male-body based contraception options only the vasectomy requires a medical intervention while condoms can be purchased and used easily (Davis, 2017). In contrast, many modern female-body based contraception methods are 'medicalized' (Guen et al., 2017). This involves visiting a doctor, taking hormones, placing IUDs or receiving an injection. Other practices involve specific knowledge for example when using female barrier methods like diaphragms (Allen, 2004). Many of the female-body based contraception methods require either time, for example when taking doctor's appointments, or money, for example when using IUDs, and can cause pain, for example when inserting IUDs (McNicholas et al., 2012) and a variety of side-effects (Littlejohn, 2013). The pill, which is a widely used form of contraception in developed countries can be associated with, amongst others, mood swings, weight gain, a loss of the libido and health concerns like a heightened risk of stroke, thrombosis and depression (Johnson et al., 2013). The side effects of hormonal contraception have been found to be the main cause of women's dissatisfaction in the use of contraceptives and the decision to change contraceptive methods (Grady et al., 2002; Johnson et al., 2013). In comparison, available male-body based methods have a much lower risk of side effects (Shih et al., 2011; Davis, 2017).

Because there are gendered expenditures connected to it, a way to examine the described gendered responsibility for contraception is by relating it to the *gendered division of labour* (Lachance-Grzela & Bouchard, 2010). It describes that particularly in heterosexual relationships women are mainly responsible for (unpaid) work in the 'private sphere', while men are mainly responsible for (paid) work in the 'public sphere' (Aboim, 2010). In the following, the gendered contraceptive responsibility and the expenditures connected to it will be conceptualised as *fertility work* (Bertotti, 2013) that is *feminized* (Kimport, 2018a): "Like housework, child care, and elder care, contraceptive decision making and responsibility present another important set of tasks that most heterosexual couples must successfully accomplish in a social context where families typically expect to have few children. This responsibility typically falls primarily to women because of a combination of biotechnological constraints and social expectations" (Fennell, 2011, p. 499). Thereby, it is assumed that the division of fertility work within a heterosexual relationship depends on different relationship dynamics (Dereuddre et al., 2017). In the following, to 'share' feminized contraceptive responsibility is conceptualised as using modern male-body based methods because lower risks and costs are connected to them in terms of fertility work (Davis, 2017) and the couples' goal of preventing pregnancy can be met (Kimport, 2018a). Thereby, the main focus is to prevent unwanted pregnancies and not to protect against STDs, as only female and male condoms can protect against them (WHO, 2018). It has been shown that contraception in penile-vaginal intercourse is mainly used to prevent pregnancies rather than protecting against STDs, especially in non-casual sexual encounters (Brown, 2015).

Because contraceptive behaviour significantly differs in developed countries (Dereudde et al., 2016b) and the social context is important for both gender equality and the gendered division of labour (Lachance-Grzela & Bouchard, 2010), the German context is described. In Germany, for those using contraceptives, the pill and condoms are most common, followed by IUDs (BZgA, 2018). In comparison to those methods, other hormonal contraceptives and sterilizations are less common (BZgA, 2018). The survey "Verhütungsverhalten Erwachsener" [contraceptive behaviour of adults] revealed that in 2018 the usage of condoms rose by nine percentage points, in comparison to the same survey in 2011 (BZgA, 2018). At the same time the usage of hormonal contraception declined by six percentage points. This development is especially pronounced for the 18- to 29-years old demographic. In this age group the share of women using the pill as birth control declined from 72 to 56 percent (BZgA, 2018). In the same survey those who solely used condoms as contraception claimed that they did so because of the reduced possibility of side effects (BZgA, 2018). This development could also imply that greater micro- and macro-level gender equality in Germany (European Institute for Gender Equality, 2019) is connected to a less gendered (i.e. 'shared') division of fertility work.

1.2. Research Objective and Research Question

When contraception is conceptualized as 'fertility work' it can be conceptualized as 'feminized' unpaid work (Bertotti, 2013). Fertility work as a part of the gendered division of labour can be considered to contribute to the share of unpaid work women often perform. *Gender equality*, in the following conceptualised by *power theories* and *gender ideology theory*, is considered to reduce the gendered division of labour (Lachance-Grzela & Bouchard, 2010). Hence, it can be hypothesized that gender equality promotes a less gendered division of fertility work. Davis (2017) proposes that for men to 'share' contraceptive responsibility, couples should use reversible male methods when appropriate and vasectomies when long-term contraception is preferred. Therefore, the research objective of this master thesis is to examine whether individual- and couple-level gender equality is associated with an increase in the usage of modern male reversible and long-term contraceptives (i.e. condoms and vasectomy). Hence the research question is: *"How does gender equality within heterosexual romantic relationships influence the usage of modern male-body based contraception in Germany*?"

1.3. Societal and Scientific Relevance

The *societal relevance* of the research question is derived mainly from a human rights perspective, concerning SRHR and gender equality. At the *International Conference on Population and Development* held in 1995, a SRHR bottom-up approach was agreed on, that ensures all women and men globally to have access to safe and effective family planning methods and to enable them to choose them freely and informed (United Nations, 1995). This implies that the choice of contraceptive methods should be free from structural restrictions and allow both men and women to practice safe, effective and accessible family planning. However, if contraceptive responsibility is gendered, women's contraceptive choices might not be free from structural restrictions and men's contraceptive needs might not always be met (Davis, 2017). Coming to a gender equality perspective and considering the gendered division of labour, women perform the majority of unpaid work (Lachance-Grzela & Bouchard, 2010). This disadvantages them amongst others in terms of access to financial means, both during employment and in later life, and representation in the 'public sphere' (Esping-Andersen, 2009). 'Fertility work' can be seen as a part of the gendered responsibilities of unpaid work and thus add to those disadvantages, also by possibly affecting physical and mental health through side effects (Littlejohn, 2013). Considering the *scientific relevance*, the main contribution of this paper can be found in the fact that, whilst gender equality has already been linked to contraceptive behaviour (Bentley & Kavanagh, 2008; Looze et al., 2019), predictors of the *gendered dimension of contraceptive responsibility* have not been researched on sufficiently (Dereuddre et al., 2017). To my best knowledge only two studies have researched on power dynamics and contraceptive behaviour: Grady (2010) in the US and Dereudde et al. (2017) in Western Europe. However, gender ideology theory has not been taken into account and both theories have not yet been examined in a single-country European context. Hence, this study adds the gendered dimension of labour division and couple dynamics in Germany to existing research on the relationship of gender equality and contraceptive behaviour.

1.4. Structure of the Master Thesis

This master thesis is divided into five parts: the introduction (1), theoretical framework (2), research design (3), results (4), and discussion (5). In the theoretical framework I examine the concept of the *feminization of contraception* and explain how theories concerning the *gendered division of labour* can be applied to contraceptive behaviour. Subsequently, I give a literature review of the most recent research stadium, summarising empirical findings concerning the relationship of gender equality to the gendered division of labour and contraceptive behaviour, also in the German context. Building on this, the conceptual model and the hypotheses are derived. In the methodological part, I describe the German Family Panel 'pairfam' (Brüderl et al., 2020a; Huinink et al., 2011) and the research design. Afterwards, the results of the descriptive analysis and the *linear probability models* are shown and discussed. In the conclusion I contextualise the outcomes and answer the research question. I discuss strengths and limitations of the theoretical and methodological approach, as well as policy implications and the need for further research.

2. Theoretical Framework

2.1. The Feminization of Contraception

The process of the *feminization of contraception* started as modern female methods were introduced in developed countries in the 1960s (Kimport, 2018a). Davis (2017) claimed that "the introduction of the pill marked a decisive shift in which women were seen as the primary bearers of contraceptive responsibility" (Davis, 2017, p. 492). She describes four disadvantages of an activity identified as 'feminine': "expectation of service, compromised cognitive authority, decreased moral standing, and diminished voice" (Davis, 2017, p. 492). The aspect 'expectation of service' entails that women often use contraception as a form of, increasingly expected, social service, including servicing a woman's partner, employer, the government or the environment. Davis identifies costs and risks as distributed unfairly. As costs she defines "financial, emotional and physical costs" (Davis, 2017, p. 493) with risks being relativized for women as they are weighted against female risks of unwanted pregnancy like maternal mortality, thrombosis and abortion. This can be related to the fact that women usually have the main responsibility for an unwanted child (Fennell, 2011). Additionally, side effects of female-body based contraceptives are risks solely affecting the female body. 'Comprised cognitive authority' entails that women's sexual and reproductive health is influenced by restrictions of their contraceptive choices by the state, religion or morality. This does not apply to male reversible methods: "because condoms can be purchased in gas station bathroom dispensers, convenient marts, and super-markets (…), men acquiring contraception are not typically subjected to intrusive questions or judgement from providers" (Davis, 2017, p. 494). She concludes that "women are denied the authority to make their own reproductive decisions" (Davis, 2017, p. 494). Regarding the aspect of 'decreased moral standing', Davis states that women are given the sole responsibility to deal with complex social and economic issues. Concerning 'diminished voice', Davis states that "the feminization of contraception reinforces medical biases that privilege persons with normative sex, gender, and sexual orientation identities" (Davis, 2017, p. 495). Furthermore, she notes that while the female responsibility for birth control discourages men to participate in fertility work, this does not have to be in men's interest since it diminishes male reproductive autonomy.

When it comes to the development of modern contraceptives, "gendered biomedical processes" (Kimport, 2018a, p. 13) need to be taken into account, which explain why there are a broad variety of modern female-body based contraceptives but only a few modern male-body based options. Oudshoorn states that "the weak alignment of contraceptive technologies and hegemonic masculinities constitutes a major barrier for technological innovation in contraceptives for men" (Oudshoorn, 2004, p. 349). She implies that masculine identities need to be newly constructed in order to develop new male contraceptives. To explain the process of the feminization of contraception, Oudshoorn states that whilst female bodies have been subject of cultural developments and historical change, "the male body appears as a stable category, untouched by time and place" (Oudshoorn, 2004, p. 350). As a consequence, the male body is not a social construct but is accepted in its 'naturalness', which does not have to be altered by medical intervention. This is reinforced by pharmaceutical companies, gynaecologists, social movements and family-planning policies only focusing on the female body and not taking into account men as potential contraceptive users (Oudshoorn, 2004). Thereby, "the difference in emergence of social movements concerning health of women and men can be understood in terms of a techno-sociality, which suggests that people construct collective identities based on a shared experience with specific technologies – in this case, contraceptive technologies. In the second half of the twentieth century, the idea of women as the sex responsible for contraception thus became the dominant cultural narrative materialized in contraceptive technologies, in social movements, and the gender identities of women and men" (Oudshoorn, 2004, p. 353). Concluding, to overcome the 'feminization of contraception' and 'share' contraceptive responsibility, it is demanded to change dominant gender roles (Oudshoorn, 2004). Increasing gender equality is connected to more gender egalitarian norms (Looze et al., 2019), which could allow for a change of hegemonial masculine identities. On the micro-level,

men can ‘share’ contraceptive responsibility by using modern male-body based methods, as they are connected to less expenditures and allow women to avoid side effects and prevent unwanted pregnancies (Davis, 2017; Terry & Braun, 2011).

2.2. Gender Equality, Gendered Division of Labour and Contraceptive Behaviour

Contraceptive behaviour in developed countries has been researched on from the perspective that gender equality is linked to increased contraception usage, especially modern female-body based methods (Bentley & Kavanagh, 2008; Looze et al., 2019). It is argued that the ability to negotiate safer sex and the access to legal contraception is positively influenced by gender equality, as the control over the own fertility is empowering for women. However, in those studies it is not considered that contraception has a gendered dimension by being ‘feminized’ (Kimport, 2018a). This means that women often take over the main responsibility for contraception (Fennell, 2011; Kimport, 2018b), which is related to investing time, knowledge, thought, money and risking physical and psychological side effects (Kimport, 2018b). Hence, contraception can be considered ‘fertility work’ (Bertotti, 2013) and can be connected to the general concept of ‘gendered division of labour’ which indicates that women perform the majority of unpaid work, like housework and care work (Lachance-Grzela & Bouchard, 2010). In line with this argumentation, it is stated that contraceptive use is “another household task that is primarily managed by women” (Dereuddre et al., 2016a, p. 2). However, it needs to be taken into account that the decision for a specific birth control method is complex, and contraceptive behaviour cannot be treated fully synonymously to household labour like cooking or cleaning. This can be seen in the ambiguous identification of contraception as a burden or as an indicator of holding control (Dereudde et al., 2017). This needs to be kept in mind and will be elaborated in the discussion. Still, multiple scholars (Bertotti, 2013; Fennell, 2011; Dereudde et al., 2017) have found some parallels between partners bargaining for housework and contraceptive responsibilities.

To connect the broad concept of gender equality with contraceptive behaviour, theories explaining the gendered division of labour are used, as it is hypothesized that similar mechanisms are operating. Thereby, gender equality is indicated by a gender egalitarian share of power, resources and gender egalitarian ideologies (Krzaklewska, 2014). When it comes to contraceptive decisions, it has been suggested that in romantic relationships there is a shift from contraception being an individual’s responsibility to protect one’s self against unwanted pregnancies to a ‘shared’ responsibility “that is influenced by broader relationship dynamics in long-term relationships” (Dereuddre et al., 2017, p. 3). Relationship dynamics include for example the allocation of power and the gender ideology. These two concepts can be found in two theoretical frameworks respectively: *power theories* and *gender ideology theory*. Connecting these approaches with contraceptive behaviour follows the increasing scientific demand to consider relationship dynamics when examining birth control choices (Dereuddre et al., 2017; Grady et al., 2010).

2.2.1. Power Theories

Power theories imply that power dynamics within a romantic relationship are connected to decision-making and bargaining processes (Dereudde et al., 2017). Thereby, previous research “has investigated how power processes shape the division of household chores, childcare and paid labour” (Dereudde et al., 2017, p. 5). Power is identified as a “multi-layered construct” (Dereudde et al., 2017, p. 6). Building on Wrong’s (1988) definition of power, both capacities in form of *resources* and social relations in form of *interactions* are used to measure power within a romantic relationship.

“Investigating couples’ division of housework from an economic perspective implies studying how couples utilize material resources as means to decide about their gender division of housework” (Nitsche & Grunow, 2016, p. 83). Classic *resource theories* state that in a relationship the partner’s external resources like income, education and occupational status allocate bargaining power (Grady et al., 2010). Thereby, education can be identified as a form of human capital, which besides the connection to higher income “reflects a range of noneconomical social competences such as health-

related knowledge, better use of information or prestige" (Dereudde et al., 2017, p. 7). Income is assumed to be transferrable into negotiating power (Lachance-Grzela & Bouchard, 2010). It is hypothesized that the partner with the greater resources has more bargaining power to avoid doing specific tasks. It remains unclear, whether *relative* or *absolute resources* (i.e. relative or absolute *power*) are more important, as multiple studies find conflicting results (Lachance-Grzela & Bouchard, 2010). The underlying assumption of the resource theory is that the topic negotiated about is unpleasant and to avoid, for example unpaid house- and care work. This assumption can be transferred to contraceptive behaviour. Considering sterilization, it could be argued that the investments connected to it, like time, possible side effects and financial costs (Kimport, 2018b) are reasons to avoid it and transfer it to a sexual partner. Considering female hormonal methods, physical and mental side effects could be reasons to avoid it (Kimport, 2018b). Considering IUDs, a possibly painful insertion could be a reason to avoid it (McNicholas et al., 2012). Considering male condoms, decreased sexual pleasure especially for men (Brown, 2015) could be a reason to avoid it; however, there are no side effects connected to it (Davis, 2017). Thus, transferring the concept of resource theory to contraceptive behaviour implies that lower (absolute or relative) power is connected to taking contraceptive responsibility (Dereudde et al., 2017) and equal power to 'sharing' contraceptive responsibilities (i.e. in this paper: using male methods (Davis, 2017)). However, this is not the whole picture: as an effective measure to prevent pregnancy and meet one's own reproductive preferences, modern contraception that is in one's own control has many positive aspects, especially for women to control their fertility. Thus, "the question can be raised whether contraceptive responsibility should be perceived as a burden or an indication of lower power, versus as a way of holding control or an indication of higher power" (Dereudde et al., 2017, p. 4). This ambiguity needs to be kept in mind when building the hypotheses and analysing the results.

Additionally to studying actual resources to measure power within a romantic relationship, the *interactional power* is examined by looking for example at the division of housework (Dereudde et al., 2017). Thereby, it is theorized that lower power is indicated by performing a higher share of housework. Even though the division of housework is related to resources, research has found conflicting results, indicating that multiple factors determine the actual division of housework (Lachance-Grzela & Bouchard, 2010). Hence, examining interactional power might allow to measure an "additional kind of power imbalance" (Dereudde et al., 2017, p. 8). Applied to contraceptive behaviour, lower power could be connected to taking the full responsibility while equal power could be related to 'sharing' contraceptive responsibility.

2.2.2. Gender Ideology Theory

The second theoretical concept connected to the gendered division of labour is *gender ideology theory*. Thereby, *gender ideology* indicates "individuals' levels of support for a division of paid work and family responsibilities that is based on this notion of separate spheres" (Davis & Greenstein, 2009, p. 87). It assumes that socialization is a relevant factor for gender roles by shaping normative expectations of how men and women are supposed to behave (Lachance-Grzela & Bouchard, 2010). The main idea is that "people's gender ideology views are situated on a continuum that ranges from traditional gender ideologies – where a strict male breadwinner/female homemaker structure is favored – to egalitarian gender ideologies – where both partners are considered equal and share the two roles more equally" (Lachance-Grzela & Bouchard, 2010, p. 772). The theory assumes "an inverse relationship between traditional gender attitudes and an egalitarian division of household labor" (Lachance-Grzela & Bouchard, 2010, p. 772). Connecting this theory to contraceptive use suggests "contraceptive choice as a gendered decision, that is part of men's and women's socialisation process into socially-normative gender identities and interactions" (Dereudde et al., 2016a, p. 2). Contraception is considered a "female sphere" (Dereudde et al., 2017, p. 11), which implies that women are mainly responsible for birth control. A more egalitarian gender ideology could therefore be connected to a less feminized contraceptive responsibility, for example by using modern male-body based contraception (Davis, 2017).

On the micro-level, gender ideology and male-body based contraceptive use can also be connected to sexual pleasure. In multiple studies men reported that condoms influence intercourse negatively, as it is perceived to reduce sexual pleasure (Brown, 2015). Male's sexual enjoyment in heterosexual intercourse is still considered more important than female's, indicated by the *gender orgasm gap.* It shows that "during heterosexual sexual encounters between cisgender women and cisgender men, women have substantially fewer orgasms than men" (Mahar et al., 2020, p. 24). Mahar et al. (2020) find "women's lack of entitlement to sexual pleasure" (p. 27) as one of the reasons for the orgasm gap. The emphasis on male pleasure could be regarded as a reason to decide against using condoms, while the possible influences of hormonal contraception on women's sexual pleasure, for example by a loss of the libido (de Castro Coelho & Barros, 2019) do not weigh in as much. Also, traditional masculine gender ideology might lead men to consider intercourse with condoms as not meeting gendered expectations as there can be peer pressure to have intercourse without condoms (Brown, 2015). Additionally, women who carry and insist on using condoms can face judgements based on gendered expectations (Brown, 2015). Regarding vasectomy, "fears about compromised sexual pleasure, decreased sexual function, and tainted masculinity are among the primary reasons why many men refuse" (Terry & Braun, 2011). This could be rooted in the gender ideology that women's sexuality is especially concentrated on procreation, whilst men's sexuality is focused on sexual pleasure and virility (Terry & Braun, 2011). Therefore, if gender egalitarian ideologies are connected to a more liberal societal view on women's sexuality, it could promote the usage of male-body based methods, as there could be less stigma connected to it and male's and female's sexual pleasure could weigh in more equally.

Gender construction theory is a variation of the gender ideology theory and implies that there is a significant relevance of the gendered meaning of unpaid work in the home, especially in heterosexual relationships. This '*doing gender'*-perspective assumes that (not) doing gender-normative work like unpaid housework helps to define gender relations within the household (Nitsche & Grunow, 2018). This leads women to do more housework and men resisting to do so to protect their gender identities (Lachance-Grzela & Bouchard, 2010). "When labor becomes 'gendered', there is typically a tendency for men or women to perform certain specific tasks. More importantly, men and women both assume that a person's gender in and of itself brings authority and expertise to that labor. In addition, the (non)performance of certain tasks may affirm or undermine a person's sense of masculinity or femininity" (Fennell, 2011, p. 499). Connecting this to contraceptive use and responsibility, Fennell describes contraceptive responsibility as being part of the "women's sphere" (Fennell, 2011, p. 496) and women as performing "contraceptive gatekeeping" (Fennell, 2011, p. 511). This implies that women engage in fertility work in order to fulfil their feminine gender role expectations, also in a context where they feel a need to compensate for entities which do not correspond to gender identities.

Concluding, it can be assumed that a more gender egalitarian gender ideology is related to a more gender egalitarian division of housework, and that this assumption can be transferred to contraceptive behaviour.

2.3. Gender Equality and the Gendered Division of Labour in Germany

Because macro-level- and context effects shape the way power dynamics and gender ideology influence the gendered division of labour (Davis & Greenstein, 2004), it is important to consider the country-specific situation when analysing it. This is also important when considering gender equality: "even though men's and women's trajectories in the educational and employment realms have become more equal over the past decades, structural and cultural path dependencies still play a key role in determining how effectively a shift from gender separate spheres to gender equity translates into a couple's everyday life" (Nitsche & Grunow, 2016, p. 82). In Germany, gender roles have changed in the late 20th and early 21st centuries. Two major drivers of the change are expanding education and women's entry into the labour market in the 1960s (Nitsche & Grunow, 2016). For heterosexual relationships today this means that women are on average equally educated as men and also participate in the labour market.

In 2019, Germany was ranked 12th in the European Union regarding the Gender Equality Index, scoring 66.9 out of 100 points (European Institute for Gender Equality, 2019). The indicators for the Gender Equality Index are 'work', 'money', 'knowledge', 'time', 'power' and 'health'. For the domains 'knowledge' and 'time' there has been a decline since 2005, while the other domains developed more in the direction of gender equality. This indicates that less women than men in Germany attain tertiary education and that women on average spend more time on unpaid care- and housework, than on paid employment and leisure activities (European Institute for Gender Equality, 2019). Thus, German heterosexual couples perform a more traditional division of housework compared to other European countries. Thereby, couples in Western Germany perform a more traditional division of housework in comparison to couples in East Germany (Nitsche & Grunow, 2016). This has historical reasons, as Germany was divided into the Federal Republic of Germany (FRG) and the German Democratic Republic (GDR) from 1949-1990. Whilst in the former communist part a dual-earner culture was established, in West Germany social policies fostered a stay-at-home parent, often the mother, for example through long phases of paid parental leave (Sainsbury, 1999). The joint taxation system still active today favours couples that perform a single-earner or one-and-a-half-earner models in comparison to both partners being full-time-earners (Nitsche & Grunow, 2016). Even though both parts became more similar after the reunion (Nitsche & Grunow, 2016), differences between East- and West-Germany can still be found that are in line with the historical division (Nitsche & Grunow, 2018). These different developments of East and West Germany "make Germany an ideal context in which to test the impact of couples' relative and absolute resources against believes in gender separate spheres and emerging ideologies of equity as affecting the gender division of housework" (Nitsche & Grunow, 2016, p. 82).

2.4. Literature Review

In the following part, I summarize empirical findings regarding the *gendered division of labour* related to *power theories* and *gender ideology theory*, also in the German context. Studies relating gender equality to contraceptive behaviour are reviewed afterwards.

2.4.1. Gender Equality and Gendered Division of Labour

The gendered division of labour is connected to two major theoretical concepts: *resource theory* and *gender ideology theory* (Nitsche & Grunow, 2016). They are assumed to operate not only independently of each other, but also in interrelation: on the one hand, gender ideology is assumed to influence resources, as gender ideology might influence the meaning of gendered resources (Nitsche & Grunow, 2016). On the other hand, resources might influence gender ideology, as for example greater education is related to a more liberal gender ideology (Lachance-Grzela & Bouchard, 2010). Regarding the resource theory, partly conflicting findings support either the influence of relative or absolute resources individually, both in combination or none of both (Lachance-Grzela & Bouchard, 2010). It was found that the relative earnings of a woman influence the change over time in men's housework participation in a heterosexual relationship (Cunningham, 2007). The same applies for relative education (Bianchi et al., 2000). Davis and Greenstein (2013) found support for the power of absolute resources when negotiating housework. For Germany, Kuehhirt (2012) found no effect of absolute income on the division of labour after controlling for children and a minor effect of relative income on the amount of housework, but only for parents. Regarding gender ideology theory "it has been shown that women who hold more egalitarian attitudes are less likely than women with traditional attitudes to report performing all of the housework, whereas men who hold more egalitarian attitudes tend to behave in a more egalitarian manner and spend more time on housework than men with traditional attitudes" (Lachance-Grzela & Bouchard, 2010, p. 772). This effect has been found in most studies investigating gender ideology theory and the gendered division of labour (Nitsche & Grunow, 2016). Still, it has been discussed whether gender ideology itself is stable over time and whether gender ideology is not only shaping behaviour but behaviour is also shaping gender ideology (Carlson & Lynch, 2013). Both

resource theory and gender ideology theory were tested simultaneously from a life course perspective in Germany. It was found that "an egalitarian gender ideology of both him and her significantly predicts more egalitarian division-trajectories, while neither absolute nor relative resources appear to have an effect on the division of housework over time (Nitsche & Grunow, 2016, p. 80).

Concluding, there are multiple studies investigating resource theory and gender ideology separately or combined and their relationship to the gendered division of labour, but the actual role of both resources and gender ideology remains unclear, as context-dependent, mixed-evidence exists, including various studies supporting each or none of the arguments (Lachance-Grzela & Bouchard, 2010; Nitsche & Grunow, 2016).

2.4.2. Gender Equality and Contraceptive Behaviour

Looking at empirical findings regarding the relationship of gender equality and contraceptive behaviour, studies have shown that gender equality and cultural norms impact contraceptive use and sexual activity (Looze et al., 2019; Madkour et al., 2014). On a national level, gender equality increased the usage of birth control (pill, dual methods, and male condoms) among the population (Looze et al., 2019). Thereby, gender equality has especially been linked to an increase in modern method use (Dereudde et al., 2016a). It is assumed that "gender equality may be linked to contraceptive use among adults through its associations with a more equal distribution of resources (including power) within heterosexual romantic relationships, better communication between sexual partners and more egalitarian gender norms in society" (Looze et al., 2019, p. 44). The last point builds on research showing that macro-level gender equality is linked to more gender egalitarian norms (Aboim, 2010). Thus, macro-level gender equality is relevant for contraceptive behaviour, therefore the national setting and social surroundings need to be taken into account. I do this by only examining Germany and controlling for east/west differences.

Only few studies examined the relationship of power dynamics and contraceptive behaviour. When measuring power within the framework of *interactional power*, it was found that couples in which the man averagely performs more housework or the woman has more say in decisions were more likely to use condoms than female reversible methods in four Western European countries (Dereudde et al., 2017). Regarding *resource theory*, it was found that the partner with the greater relative resources has a bigger influence on the couple's contraceptive choice (Grady et al., 2010). Grady et al. (2002) found that an increasing educational attainment of women led to a decrease in switching from the pill to less effective methods or non-use, and to an increase in switching from the pill to male condom use. Regarding absolute resources, "for sterilization, it is found that the higher educated or those with a higher income are less likely to rely on female sterilization and more likely to use male sterilization, compared with the lower-educated or those with lower income" (Dereudde et al., 2016a, p. 2) in Western Europe. These findings could imply that the division of fertility work is related to female relative or absolute resources in heterosexual relationships. Thereby, both relative and absolute share of external resources are relevant for the theory, but it is not clear yet, "whether higher absolute or relative power leads men and women to use contraceptives themselves or to transfer this task to their partner" (Dereudde et al., 2016a, p. 2). Thus, exploring those theories in a national context without cross-national comparisons might help to further disentangle those mechanisms and to examine whether greater absolute and relative power is connected to taking or transferring contraceptive responsibility.

Regarding *gender ideology theory*, there has been only little research targeting the relationship of gender ideology and contraceptive behaviour conceptualised as fertility work. Grady et al. (2010) do not find support for the assumption that gender egalitarian attitudes influence method choices in the US when also considering relationship status. Findings regarding the gendered roles related to contraceptive use and gendered roles concerning sexuality can help to identify possible mechanisms. Fennell (2011) studied the contraceptive responsibility in long-term relationships in the US and explains the mainly female responsibility of birth control by the social framing of contraception as a *female sphere* and the technological constraints to men's participation (Fennell, 2011). Fennell considers the *gendered*

contraceptive socialization which implies that both men and women are socialized to know about their gender-specific contraception (i.e. hormonal reversible contraception for women and condoms for men), yet women also have extensive knowledge of condoms while men on average have less knowledge of female hormonal methods (Fennell, 2011). Fennell found that men have difficulties in the communication about contraception and that in relationships usually the woman has the final say about the usage of contraceptives. Many women in her study expressed that they preferred to be primarily in charge of contraception and engage in 'contraceptive gatekeeping' (Fennell, 2011, p. 511). This is backed up by the finding that "women frequently arrive in new relationships with a previously established contraceptive practice and simply inform men – or not – about that practice" (Fennell, 2011, p. 516). This can be related to Oudshoorn's (2004) finding that contraceptive responsibility does not fit within hegemonial masculine identities. In contrast, Fennell (2011) also found that some men in her sample considered taking responsibility for contraception and potential pregnancies as a way to express their ideals of masculinity and thus a way to 'do gender'.

Concluding, the hypothesized link between micro-level gender equality and the usage of male-body based contraception can be found in power theories and gender ideology theory. Possible mechanisms are that as female power, in form of relative and absolute resources or interactional power becomes equal to male's, negotiation and communication about contraceptive preferences become increasingly possible. As gender norms decline, gender ideologies and female sexuality become more liberal and fertility work may become more likely to be 'shared'. Those mechanisms are assumed to be related to macro-level gender equality, that indicates women's greater relative and absolute resources and more gender-egalitarian gender norms (Lachance-Grzela & Bouchard, 2010). These processes are influenced by multiple factors related to contraception including individual preferences, efficiency, availability and sexual health education.

2.5. Conceptual Model and Hypotheses

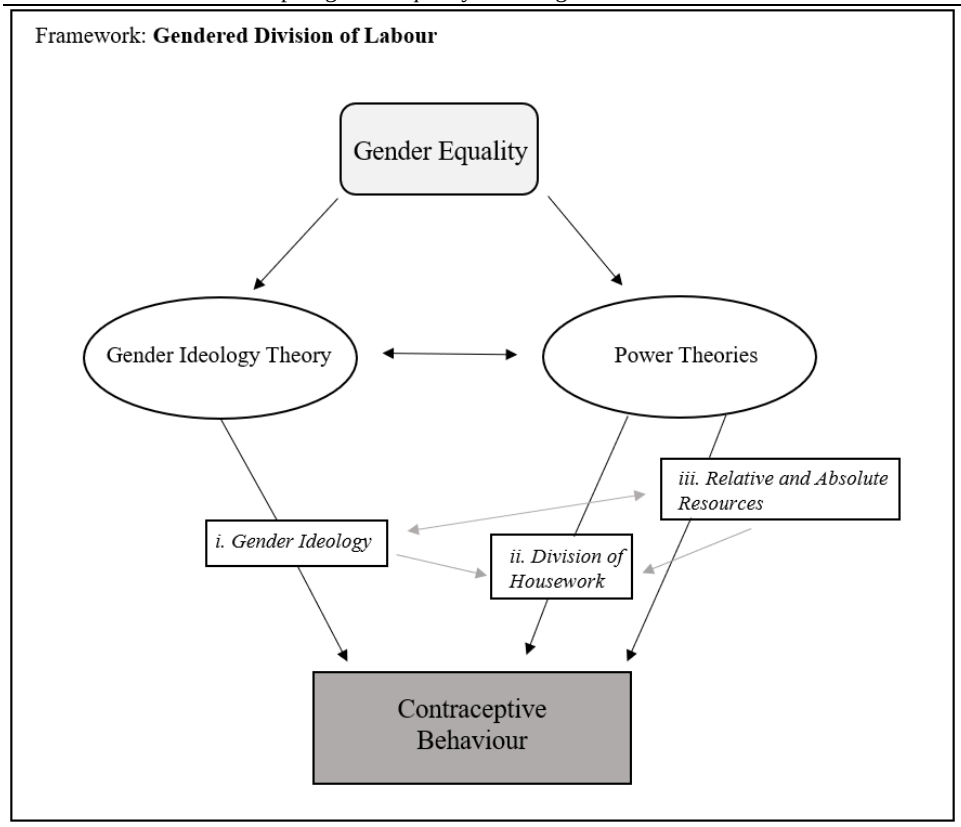
From the presented theoretical framework and previous research, I derive two hypotheses about the relationship between *micro-level gender equality* and *contraceptive behaviour*. Thereby, *power theories* and *gender ideology theory* function as the theoretical background to explain this relationship. These two theoretical concepts are also used to explain the *gendered division of labour* for example concerning housework. By conceptualising contraceptive behaviour as 'fertility work' (Bertotti, 2013) that is 'feminized' (Kimport, 2018a), the theoretical framework connected to the gendered division of labour can be transferred to contraceptive behaviour.

Because due to lower failure rates modern methods more effectively prevent pregnancies than traditional methods (WHO, 2018) and their usage is related to expanding sexual education (Looze et al., 2019), gender equality has in previous research been associated with increased modern method use (Dereudde et al., 2016a). This finding will be tested within the described conceptualisation of gender equality as equal or high power and gender egalitarian ideologies in the first hypothesis (H1). As the framework from the gendered division of labour is used and research has shown that gender equal relative, absolute or interactional power, as well as more egalitarian gender ideologies are connected to a more equal share of gendered labour (Lachance-Grzela & Bouchard, 2010), and a way to 'share' contraceptive responsibility for men is to use male-body based contraceptives (Davis, 2017), the second hypothesis states that greater gender equality in form of equal female power and/or more egalitarian gender ideologies leads to a higher probability of using modern male-body based contraceptives (H2).

H1: Gender equality is positively related to modern contraceptive use.

H2: Gender equality is positively related to modern male-body based contraceptive use.

Figure 1: Conceptual framework of the relationship of gender equality and contraceptive behaviour, using the theoretical framework of the relationship of gender equality and the gendered division of labour.



Notes: The theoretical framework connected to the gendered division of labour (i.e. power theories and gender ideology theory) is transferred to contraceptive behaviour, within the conceptualisation of contraceptive behaviour as 'fertility work' (Bertotti, 2013). The four main predictors (squares) are tested individually, as they are assumed to be interrelated (Lachance-Grzela & Bouchard, 2010).
Source: own illustration; derived from the theoretical framework and previous empirical findings

Gender equality within these two hypotheses will be conceptualised by power theories and gender ideology theory. For power theories, firstly equal interactional power measured by the division of housework is expected to be positively related to the dependent variables. Secondly, equal relative or high (female) absolute resources, measured by labour force status and education, are hypothesized to be positively related to modern method use in general and male-body based methods in particular. For gender ideology, a more egalitarian gender ideology is expected to be positively related to each of the dependent variables. The predictors will be tested in separate models, as both theoretical concepts are expected to influence each other (Nitsche & Grunow, 2016).

3. Research Design

3.1. Data

The following analyses are based on release 11.0 of the data from the Panel Analysis of Intimate Relationship and Family Dynamics 'pairfam' (Brüderl et al., 2020a; Huinink et al., 2011). „The anchor population is defined as all people living in Germany in private households who have sufficient mastery of the German language to follow the interview" (Huinink et al., 2011, p. 90). The focus of the data is on partnership and family processes. Pairfam is an ongoing panel study that was launched in 2008 and will be completed after twelve waves in 2022. It has a *multi-cohort design*, which means that the anchors (i.e. primary respondents) were drawn from three birth cohorts: 1971-1973, 1981-1983, and 1991-1993. In wave 1 (2008/2009), the panel included 12,402 anchors, who were then interviewed yearly. "For the youngest cohort 4,334 interviews were realized, for the middle cohort 4,016, and for the oldest cohort 4,052" (Huinink et al., 2011, p. 91). Pairfam has a *multi-actor design*, which means that the partners, parents, and children of the anchors have been interviewed separately and were included in the data in separate datasets. A more detailed description of the data can be found in Huinink et al. (2011).

In the following analyses, I use wave 1 data to test predictors derived from the theoretical framework concerning their relationship with contraceptive behaviour *cross-sectionally*. I chose wave 1 to avoid selection effects due to panel attrition and to firstly make *exploratory* analyses and identify possible mechanisms of how gender equality could be related to contraceptive behaviour. Pairfam is affected by panel attrition, with less than 50 % of the anchors still participating in wave 6 and one third of the respondents still participating in wave 9 (Brüderl et al., 2018). Advantages of looking at other waves or doing longitudinal research to examine this topic will be explored more detailed in the discussion (5). The data set is appropriate for the research question as it entails rich information regarding contraceptive methods, detailed individual- and couple-level information regarding the education and employment history of the anchor and the partner, relationship trajectories, gender ideology attitudes, and perceptions of the division of housework. Also, the dataset entails detailed demographic information on both the anchor and the partner. A more detailed reflection on the data and ethical considerations concerning the data set can be found in appendix table A1.

3.2. Sample Selection

All the information used in the analyses are drawn from the *anchor dataset*, as it entails rich information about the anchor and the partner. Due to a lower response rate to the partner questionnaires (51.5 %) (Huinink et al., 2011), cases would be lost if information from the partner dataset was additionally included.

Firstly, I code answers with the values -9 to -1 as missing values for all variables. Thereby, -1 stands for 'don't know', -2 'no answer', -3 'does not apply', -4 'filter error/incorrect entry', -5 'inconsistent value', -6 'unreadable answer', -7 'incomplete data' and -9 'invalid multiple answer' (Brüderl et al., 2020a). Pairfam entails information of three birth cohorts with respondents aged 14-18 years in cohort 1, 24-28 years in cohort 2, and 34-38 years in cohort 3. I exclude women who are older than their childbearing years (> 49 years) from the sample. This applies only to female partners of the anchors (13 respondents). Also, I exclude all respondents from cohort 1, as only 30 respondents of this cohort are 18 years old and younger respondents might be influenced in their contraceptive behaviour by their parents or are not yet sexually active. Because different mechanisms in contraceptive behaviour are expected to operate in casual intercourse in comparison to non-causal relationships (Brown, 2015), only respondents reporting to be in a heterosexual relationship are kept in the analytic sample. Persons who reported to be homosexual (182 respondents) or not in a relationship ('single', 4,999 respondents) are deleted from the analytic sample. I exclude respondents who claimed they or their partner are pregnant (387 respondents), and those who claimed they and their partner were trying to get pregnant within the last twelve month (628 respondents) from the sample. Also, respondents who claimed they or their partner are infertile are excluded from the sample but only if it was not due to sterilization. Respondents who claimed they have not been sexually active are excluded from the sample. Respondents who did not give information if they in general used contraception in the last three month are excluded from the sample, as well as respondents who claimed they used contraception but did not indicate which methods they used (107 respondents). I delete respondents who claimed they used contraceptives and who's

contraceptive method was summarized as 'something else' (56 respondents) than the pill, condom, other hormonal methods, IUDs, diaphragms and spermicides, natural methods, sterilization, withdrawal or emergency contraception from the sample, as it is important for the analysis to separate between traditional and modern, as well as between female and male methods. Respondents who used multiple methods, which did not entail the combination of hormonal methods and male condoms, or emergency contraception and any other methods, are excluded from the sample (28 respondents), as it cannot be defined which method is mainly used. Lastly, I exclude all respondents with missing values on the variables gender ideology, education and labour force status (67 respondents) from the sample.

After this procedure *4,060 anchor respondents* remain in the analytic sample concerning the first hypothesis and *3,333 anchor respondents* in the subsample only using modern methods concerning the second hypothesis. Demographic information on the analytic sample will be provided in part 3.3.3. describing the co-variates.

3.3. Variables

In the following, the dependent variable is on the couple-level, as the contraceptive method used refers to both partners in a heterosexual relationship. The independent variables differ: some are on the individual-, some on the couple-level. All items used to operationalised the variables can be found in appendix table A2.

3.3.1. Dependent Variables

Firstly, I create a variable which includes combined information on the contraceptive methods used in the past three months by the anchors and their partners. "Respondents from cohorts 2 or 3, or from cohort 1 who have already had sex and who are (i) female and not pregnant and also don't have a female partner who is expecting a child, or (ii) male and don't have a female partner who is expecting a child" were asked "Did you (…) use some form of contraception in the past three months?" (pairfam Group, 2020, p. 57). Afterwards, heterosexual respondents who used contraception were asked: "What method(s) did you (…) use primarily? Multiple answers are possible" (pairfam Group, 2020, p. 58). Possible options were 'birth control pill, mini-pill', 'condom', 'hormone preparations', 'IUDs', 'Diaphragm/foam/suppository/gel', 'female natural birth control', 'hysterectomy', 'vasectomy', 'withdrawal method, coitus interruptus', the 'morning after pill', and 'something else'. Because multiple answers were possible, respondents could indicate that they were using more than one method. 683 respondents of the analytic sample used no contraception, 2,625 used one contraceptive, 687 used two forms of contraceptives, 57 three, and 8 four.

Table 2: Distribution of contraceptives used, pairfam wave 1, own calculations

Method of contraception	**Freq.**	**%**
No contraception	683	16.82
Pill, Mini-Pill	1,448	35.67
Condom	553	13.62
Dual use: hormonal method and condom	610	15.02
Hormonal preparations	134	3.30
IUDs	435	10.71
Diaphragms, Spermicides	6	0.15
Female Natural Methods	24	0.59
Hysterectomy	68	1.67
Vasectomy	79	1.95
Withdrawal	20	0.49
Total	**4,060**	**100.00**

I code respondents who claimed they did not use contraceptives in the past three months as using no contraception. Respondents who claimed they used contraception and mentioned the pill as at least one contraceptive method are coded as using the pill, unless they used it in combination with condoms. In this case, I categorize them as *dual use*. The pill is coded as the main contraceptive method if it was combined with any other contraceptive method than condoms. I made this decision as the pill is the most common contraceptive method in Germany (BZgA, 2018) and one of the most effective ones

(WHO, 2018). If a respondent indicated multiple use it could be that the other contraceptive was used in case it was forgotten to take the pill, or antibiotics, diarrhoea or vomiting compromised the effectiveness of the pill. In the category condoms I include all cases in which condoms were used solely, or in which condoms were combined with traditional methods or emergency contraception, as arrangements like this imply 'shared' responsibility and contraceptive communication. Cases in which condoms were used in combination with the pill, hormonal preparations or IUDs are coded as *dual use*. This decision was made since hormonal methods are highly effective (failure rates below 1% when perfectly used) and only imperfect use leads to failure rates up to 30 % (Woods et al., 2006). This is why couples may rely on dual use in situations where higher failure rates are expected, by combining condoms and hormonal methods (Woods et al., 2006). If the motivation of this contraceptive behaviour results from mistrust into the effectiveness of the method, then condom use can be considered a 'back-up'-method and not as 'shared' responsibility. However, it could be argued that dual use including condoms is more of a 'shared' responsibility than solely relying on female methods. Therefore, in a robustness check (4.3) those categorized as dual use are excluded from the analyses.

Emergency contraception was only used in combination with other methods, most commonly with condoms (16 out of 17 cases emergency contraception). If another method failed or is expected to have failed, emergency contraception can be used after sexual intercourse to prevent unwanted pregnancies. However, emergency contraception is not meant to be used as a mean to prevent pregnancy on a regular basis. In 2008/2009 emergency contraception could only be purchased after a consultation of a doctor and only on prescription (Pfeifer & Reutter, 2020). Thus, emergency contraception is not considered a single contraceptive category and if it was used in combination with the pill or condoms then one of those methods is considered the main contraceptive method. For all other categories, I include those cases in which the respondent only indicated one method of contraception which is then considered the main method.

Any Modern Method

For the first hypothesis (H1) the contraceptive behaviour of interest is *any modern method* in comparison to less effective traditional methods (WHO, 2018) or no method at all. Modern methods include the pill, male condoms, dual methods, hormonal preparations, IUDs, diaphragms and spermicides, and male and female sterilization (WHO, 2018). The first dependent variable is coded as a dummy variable, where 0 indicates no or traditional contraceptive use and 1 indicates the usage of any modern contraceptive.

Table 3: Distribution of modern methods, pairfam wave 1, own calculations

Modern Methods	**Freq.**	**%**
No or Traditional Contraception	727	17.91
Any Modern Contraception	3,333	82.09
Total	**4,060**	**100.00**

Modern Male-Body Based Methods

For the second hypothesis (H2) the contraceptive methods of interest are modern male-body based methods, i.e. condoms and vasectomy. Thereby, the sample consists of respondents who use any modern contraceptive (3,333 respondents) because mechanisms between not using any contraception at all or relying on less effective, traditional methods (WHO, 2018) might be different from choosing between modern methods (Dereudde et al., 2016a). Therefore, the second dependent variable is coded as a dummy variable, whereby 0 indicates any modern female-body based method, including dual methods, and 1 indicates any modern male-body based contraceptive.

Table 4: Distribution of modern male-body based methods, pairfam wave 1, own calculations

Male-Body Based Method	**Freq.**	**%**
Modern Female or Dual Methods	2,701	81.04
Modern Male-Body Based Methods	632	18.96
Total	**3,333**	**100.00**

3.3.2. Independent Variables

In the following analyses, I test *power theories* and *gender ideology theory* with regard to contraceptive behaviour of heterosexual couples in Germany. For each theory, the relevant predictors are operationalised and the distribution is shown.

Interactional power

To operationalize *interactional power*, the *division of housework* is considered (Dereudde et al., 2017). To measure the division of housework, following Nitsche and Grunow (2016) the item considering *washing, cooking and cleaning* is used that asks: "To what extent do you and (name partner (sd4n)) share duties in the following domains? If you have a housemaid, nanny, or similar household help, then refer in your answers only to the portion of the work done by you and/or your partner" (pairfam Group, 2020, p. 44). Respond possibilities were: '(Almost) completely, my partner'; 'for the most part, my partner'; 'split about 50/50'; 'for the most part, me'; and '(almost) completely, me'. I code anchors who responded 'another person' or 'doesn't apply to our situation' as missing values (13 cases). To identify the share women and men perform in their relationships, in the operationalisation of the variable the sex of the anchor is considered. This means for the category 'woman does more' I include all respondents who are male and reported that their partner does most or all of the work or who are female and reported to do all or most of the work. Every respondent who reported a '50/50 share' is assigned to the category *equal share*. If the anchor was male and reported to do most or all of the work, he is assigned to the category *man does more*. This is also the case for female anchors who reported their partner does most or all of the work. Because only 70 respondents can be assigned to the category *man does more* I create a binary variable that differentiates between '*traditional*' share of work (i.e. woman does more) and '*non-traditional*' share of work (i.e. equal or man does more). In terms of interactional power, a '*non-traditional*' arrangement indicates equal power, whilst a '*traditional*' arrangement indicates lower female power. It needs to be noted that men tend to overestimate their share whilst women tend to underestimate men's share (Nitsche & Grunow, 2016). Therefore an interaction effect with sex will be included in the models. For the analysis with the predictor *division of housework* a subsample of 3,197 respondents is used, as only *cohabitating persons* were asked to give information on this item.

Table 5: Distribution of division of housework, pairfam wave 1, own calculations

Division of Housework	**Freq.**	**%**
Traditional	2,122	66.37
Non-Traditional	1,075	33.63
Total	**3,197**	**100.00**

Relative and Absolute Power

Another theory taking the power perspective is the *resource theory* (Dereudde et al., 2017). As there are conflicting findings regarding the relevance of relative or absolute resources (Lachance-Grzela & Bouchard, 2010), both approaches will be tested in the following. Since *education* is assumed to be connected to sexual health knowledge and capabilities to communicate about sexuality (Fennell, 2011), both men's and women's *absolute education* is considered in the models. I use the item entailing information on education classified by ISCED-97 (Brüderl et al., 2020b). In the item it is assumed that respondents who were still enrolled in education by the time of the interview (233 respondents) finalized their education. Following Dereudde et al. (2017) I operationalize absolute education in three categories. Thereby, 'no degree' and 'lower secondary education (2a and 2b)' are classified as *low education*, 'upper secondary education vocational', 'upper secondary education general' and 'post-secondary non-tertiary education' are classified as *middle education* and first and second stage of tertiary education are classified as *high education*.

Table 6: Distribution of absolute education, pairfam wave 1, own calculations

	Female		*Male*	
Absolute Education	**Freq.**	**%**	**Freq.**	**%**
Low Education	214	9.33	114	6.46
Middle Education	1,342	58.50	980	55.49
High Education	738	32.17	672	48.34
Total	**2,294**	**100.00**	**1,766**	**100.00**

In previous research, an often used indicator for resources was income (Lachance-Grzela & Bouchard, 2010). Even though pairfam contains information on anchors' and their partners' monthly net income, it is not used in the following analyses, since after merging the anchor and the partner dataset to calculate relative income, only 714 cases sustain (appendix table A3). To avoid selectivity effects and reducing the case number substantially, the labour force status is used instead. To operationalize *relative power*, the *'relative' labour force status* is calculated, as it is assumed to give insights about men's and women's financial means within a relationship and their time availability. Also, occupational status can be connected to prestige, which is another power indicator (Dereudde et al., 2017). Information about the anchor's and the partner's labour force status is used. Both items contain the categories 'nw, education', 'nw, parental leave', 'nw, homemaker', 'nw, unemployed', 'nw, military service', 'nw, retired', 'nw, other', 'w, vocational training', 'w, full-time employment', 'w, part-time employment', 'w, marginal employment', 'w, self-employed', and 'w, other', whereby 'w' means working, and 'nw' means not working (Brüderl et al., 2020b, p. 46). To categorize all female employment, female anchor information and female partner information is combined and categorized into four categories 'not working', 'vocational training', 'full-time employment or self-employed' and 'part-time, marginal or other employment', whereby 'other' refers to internships, or occasional employments. The same is done for male anchors and male partners (appendix table A4). To build a predictor for relative resources, I create three categories of combinations of employment statuses within couples. '*Male breadwinner*' indicates that the man is the 'main' worker in the relationship. Thereby, the combinations can be 'man working and woman not-working' or 'man working full-time and woman working part-time'. I use the same concept vice versa to create the category *'female breadwinner*'. The category *'equal status'* implies that both partners have the same employment status, independent of what it is.

Table 7: Distribution of 'relative' labour force status, pairfam wave 1, own calculations

'Relative' Labour Force Status	**Freq.**	**%**
Equal Status	1,448	35.67
Male Breadwinner	2,235	55.05
Female Breadwinner	377	9.29
Total	**4,060**	**100.00**

Gender Ideology

To test *gender ideology theory*, a variable measuring individual-level *gender ideology* is needed. Following Nitsche and Grunow (2016) I operationalise gender ideology with the item stating "men should participate in the housework to the same extent as women", whereby respondents can answer on a scale from 1 ('totally disagree') to 5 ('totally agree') (pairfam group, 2020, p. 2). Following Nitsche and Grunow (2016) this variable is used as a quasi-metric, continuous predictor for gender ideology. Thereby, a higher value indicates a more gender egalitarian attitude.

Table 8: Statistics on predictor for gender ideology, pairfam wave 1, own calculations

Variable	**Obs.**	**Mean**	**Std. Dev.**
Gender Ideology	4,060	4.32	0.95

3.3.3. Control Variables

In the models I test the predictors of interest adjusted for control variables that are derived from the theoretical background. As I am interested in dynamics within heterosexual couples and gendered differences are expected, I control for the *sex* of the respondent in all models where theoretically appropriate. To see whether the expected mechanisms differ between men and women, I include

interaction effects between the predictor of interest and the sex of the respondent. The analytic sample contains two birth cohorts (1971-73, 1981-83). Thus, the age distribution of the sample does not represent the actual age distribution of Germany and can therefore not claim to be representative. However, the analyses are made to find possible relationships between gender equality and contraceptive behaviour that might be helpful to examine this topic further and more detailed in future research. Thus, in the models it is controlled for *cohort* to adjust for cohort differences; however, interaction effects with cohort are not of interest. Cohort differences can be expected because a higher percentage of cohort 3 lives in a coresidential relationship and has children (appendix tables A5 and A6), which affects the gendered division of labour, but might also influence contraceptive behaviour. Also, a generational change in gender ideology with more gender egalitarian views in younger cohorts may result in younger men performing a greater share of housework (Davis & Greenstein, 2004). Because cohort is included in the analysis, age is not controlled for. In the German context, it is import to control for *east/west differences*, as different historical backgrounds have led to different developments in areas of the former GDR in comparison to areas of the FRG. This applies especially with regard to gender ideology and female labour force participation (Nitsche & Grunow, 2016). Because commitment to the relationship has been found to influence contraceptive behaviour (Dereudde et al., 2017) another control is a dummy variable indicating whether a couple is *cohabitating* or not. Also, power theories could have different mechanisms for non-cohabitating couples. This control is not included in models with the predictor *division of housework*, since only cohabitating couples are in this subsample. The *number of children* as a categorical variable with three categories is also controlled for, considering the number of biological children of the anchor and the partner born until the time of the interview. This is of interest as research has shown that after the birth of a child the division of housework becomes more traditional (Kuehhirt, 2012). This could also affect contraceptive behaviour. Even though *religion* is likely to influence contraceptive behaviour (Grady et al., 2010) it is not included in the analysis as it is expected to be highly correlated with gender ideology (Whitehead, 2012).

Table 9: Distribution of control variables, pairfam wave 1, own calculations

Variable		**Freq.**	**%**
sex_anchor	Male	1,766	43.50
	Female	2,294	56.50
	Total	**4,060**	**100.00**
cohort	Cohort 2	1,874	46.16
	Cohort 3	2,186	53.84
	Total	**4,060**	**100.00**
east	West	3,299	81.26
	East	761	18.74
	Total	**4,060**	**100.00**
cohabitation	Not Cohabitation	850	20.94
	Cohabitation	3,210	79.06
	Total	**4,060**	**100.00**
num_kids	No children	1,837	45.25
	One Child	843	20.76
	Two children +	1,380	33.99
	Total	**4,060**	**100.00**

3.4. Methodological Approach

The goal of this thesis is to investigate whether predictors expected to influence the gendered division of labour derived from power theories and gender ideology theory can be related to contraceptive responsibility within heterosexual romantic relationships. To identify possible mechanisms and differentiate between the theories, as they are to some degree interrelated (Lachance-Grzela & Bouchard, 2010), I test predictors belonging to each theory separately. Since the dependent variables are dichotomous, *linear probability models* are chosen. To test the robustness of the linearity assumption, I also calculate *logistic regression models* (4.3). I choose linear probability models because

the interpretation of the effects is more straight-forward than in logistic regression models. In the first set of models for each predictor the dependent variable concerns *modern methods* to estimate the probability to use any modern contraceptive as opposed to no or traditional methods. In the second set of models for each predictor the dependent variable concerns *male contraception* to estimate the probability of using a modern male-body based method as opposed to any modern female-body based method. Hence, the second set of models is a subsample of the original sample. Since to my best knowledge power theories and gender ideology theory have not yet been researched on in relation to contraceptive behaviour in Germany, analyses are made *cross-sectionally* with an *exploratory approach*, that allows to firstly identify possible cross-sectional relationships. Thereby, an analytical and theoretical framework is set and further research taking a longitudinal approach to identify causal relationships can build on this. Pairfam offers two sets of weights that can be used on the data: *design weights* and *poststratification weights* (Brüderl et al., 2020a). The design weight can be used as cohorts are represented disproportionally in the data and are thus not representative for the German population. Because the goal of the analyses is not to actually produce representative findings but to investigate possible mechanisms I decide not to apply design weights. Instead, in all models it is controlled for cohort differences. The poststratification weight can be used to account for non-response bias. The response rate was 36.9 % overall for wave 1 (Huinink et al., 2011). However, because response rates below 40 % are not uncommon for Germany and do not have to lead to a large response bias (Huinink et al., 2011) and because the goal of the paper is to identify possible mechanisms and not to focus on actual predicted values, I decide not to use the poststratification weight.

The variables used in the analyses are either on the individual- or the couple-level. As only the anchor respondents are included in the analyses and not the partners, in the analyses it does not have to be differentiated between the individual- and couple-level. This approach is called a 'one-sided design' (Mustanski et al., 2014). Each predictor is tested within both dependent variables: *modern methods* (H1) and *male contraception* (H2). To identify mechanisms of co-variates, I include the control variables into the models separately. The underlying function of the nested models in general is as follows:

$$ContraceptiveBehaviour = \beta_0 + \beta_1 GE + (\beta_2 Sex + \beta_3 GE*Sex) + \beta_4 Covariates + \varepsilon$$

Thereby, 'ContraceptiveBehaviour' is the dependent variable and indicates either the use of modern methods (H1) or male contraception (H2). 'GE' (Gender Equality) stands for the predictor of power theories or gender ideology theory that are tested in separate models; 'Sex' and the interaction effect control for sex differences where they are theoretically expected, and the co-variates entail the set of control variables. Specific regression equations for each model can be found in appendix table A7.

3.5. Model Assumptions

In order to estimate linear probability models two OLS-assumptions have to be addressed: the *linearity assumption* for continuous predictors and the *homoscedasticity assumption*. Because the latter is violated by default in linear probability models since the dependent variable is dichotomous, robust standard errors will be used in the analysis to account for heteroscedasticity (Kohler & Kreuter, 2016).

The linearity assumption only needs to be tested for the continuous predictor *gender ideology*. To test the linearity assumption a likelihood ratio test is performed for both dependent variables. The LR test checks whether a more restrictive and a less restrictive model are nested or significantly different from one another to decide which one is the better fit (Taboga, 2017). Thereby, the linear model is more restricted than the quadratic model and nested in it. The null hypothesis of the test is that the two models are not significantly different. If the null hypothesis cannot be rejected the more restricted model is chosen due to parsimony.

To test the linearity restriction of the variable gender ideology I estimate two regressions on modern methods, one including the linear and one the quadratic trend. Then a LR test is performed showing that the null-hypothesis cannot be rejected (Prob>chi2=0.6638). Hence, I assume a linear relationship of gender ideology and modern methods. The same test is performed with male contraception as the

dependent variable. The test shows that the null hypothesis can only be rejected at a 90%-significance level (Prob>chi2=0.0694). This implies that at a marginal significance level a quadratic model would improve the model fit. However, as the difference is only marginally significant and a u-shaped relationship is not assumed theoretically, the more restricted parameter is included in the model. For the interpretation of the parameter it needs to be kept in mind that a quadratic modelling would also be justifiable and thus, I discuss and show results of the less restricted model in appendix table A10.

4. Results

4.1. Descriptive Analysis

In part 3 the distribution of the dependent, independent and control variables were shown. When looking at the dependent variables, it can be seen that for the analytic sample the pill was the most commonly used contraceptive (35.67 %), followed by dual use (15.02 %) and condoms (13.62 %). The ordering of the usage of the contraceptives in Germany matches other studies concerning contraceptive behaviour at that time (BZgA, 2007, 2011). 16.82 % of the analytic sample did not use contraception in the last three months, even if they did not claim trying to get pregnant. This could result from temporal abstinence, dissatisfaction with the former methods (Littlejohn, 2013), or not knowing that natural methods like rhythm method are considered contraceptive methods. 1.08 % of the analytic sample solely relied on traditional methods, leading to a total of 82.09 % of the analytic sample relying on any modern method. Of those who use modern methods, 18.96 % rely on male-body based contraceptives. Thereby, condoms account for 16.59 % of the male contraception, and vasectomies for 2.37 %. Because of the multi-cohort design of pairfam, cohort differences might account for different patterns of gender equality and contraceptive behaviour. Hence, differences in contraceptive behaviour between the two cohorts are shown in table 10.

Table 10: Distribution of contraceptive behaviour, by cohort, pairfam wave 1, own calculations

	Cohort 2		*Cohort 3*	
Method of contraception	**Freq.**	**%**	**Freq.**	**%**
No Contraception	231	12.33	452	20.68
Pill, Mini-Pill	806	43.01	642	29.37
Male Condoms	200	10.67	353	16.15
Dual Use	455	24.28	155	7.09
Other Hormonal Methods	79	4.22	55	2.52
IUDs	87	4.64	348	15.92
Diaphragms, Spermicides	-	-	6	0.27
Female Natural Methods	5	0.27	19	0.87
Female Sterilisation	2	0.11	66	3.02
Male Sterilisation	3	0.16	76	3.48
Withdrawal	6	0.32	14	0.64
Total	**1,874**	**100.00**	**2,186**	**100.00**

The younger cohort more commonly relied on the pill and dual methods, than the older cohort. In the older cohort a bigger portion claimed to not use contraceptives at all, in comparison to the younger cohort. Long-acting contraceptives were more common in the older cohort: 15.92 % relied on IUDs, and 6.50 % relied on male or female sterilisation. In the younger cohort, 4.64 % used IUDs, and 0.27 % relied on sterilization. A reason for this could be that respondents of the older cohort have already finished their family planning. Traditional methods were more common in the older cohort (1.51 % vs. 0.59 %). Cohort differences in contraceptive behaviour could result from different socialisation: in the 90s hormonal methods were widely questioned in the public ('pill scare') due to an association with deep venous thrombosis (Osterkorn & Sclwamm, 1998), whilst by the time of the interview and the time respondents from cohort 2 became sexually active, the pill and other hormonal methods were prescribed frequently by gynaecologists and less questioned by the public (Kimport, 2018a). Criticism towards hormonal contraception only became more public in Germany recently (BetterBirthControl, 2020).

The independent variables consist of predictors connected to *power theories* and *gender ideology theory*. Within power theories, two lines of argumentation are followed: looking at *interactional power* and at *absolute and relative resources* (Lachance-Grzela & Bouchard, 2010). Firstly, as the predictor measuring interactional power, the actual division of housework is examined descriptively. It needs to be noticed that only 78.74 % of the analytic sample are in the subsample of interactional power, because

only cohabitating couples are considered. Table 5 shows that the most common arrangement was traditional (66.37 %) and roughly a third of the sample reported to perform a non-traditional arrangement (33.63%), implying imbalanced interactional power across the sample. Research has shown that men and women report the division of housework differently (Nitsche & Grunow, 2016) which is why the distribution by gender is shown in table 11. Matching previous research, men more commonly reported an equal share of housework than women.

Table 11: Distribution of division of housework, by sex, pairfam wave 1, own calculations

	Female		*Male*	
Division of Housework	**Freq.**	**%**	**Freq.**	**%**
Traditional	1,329	70.54	793	60.40
Non-traditional	555	29.46	520	39.60
Total	**1,884**	**100.00**	**1,313**	**100.00**

Cohort differences can be expected because the division of housework became more equal over time and younger generations are expected to be more gender egalitarian (Lachance-Grzela & Bouchard, 2010). Table A8 in the appendix shows that in the younger cohort, housework was less traditionally distributed. Still, in both cohorts the majority of respondents claimed that women perform more housework than their partners. Table 12 shows the division of housework by contraceptive behaviour. That the smallest share of traditional division of housework can be found in the group using female contraceptive methods supports the hypothesis that a more gender equal share is related to a higher probability of using modern contraceptives. In the group using modern male-body based contraceptives a greater share performed a traditional division of housework than in the group using modern female-body based methods. This distribution descriptively does not support the hypothesis that equal interactional power is related to a higher probability of using male-body based contraceptives.

Table 12: Distribution of division of housework by contraceptive behaviour, pairfam wave 1, own calculations

	Female Methods		*Male Methods*		*No/Traditional Methods*	
Division of Housework	**Freq.**	**%**	**Freq.**	**%**	**Freq.**	**%**
Traditional	1,320	64.71	363	68.36	439	70.13
Non-Traditional	720	35.29	168	31.64	187	29.87
Total	**2,040**	**100.00**	**531**	**100.00**	**626**	**100.00**

Concerning *resource theory*, in this analysis education and labour force status are considered. For those predictors, information on both the anchors and partners are used. When comparing men's and women's absolute power, operationalized by education, in table 6, differences can be especially found looking at the share reaching high education (38.05% men, 32.17% women). Table 13 shows that the biggest share of women having low education were using no or traditional methods, which supports hypothesis H1 that greater resources are related to a higher likelihood of using modern methods. The biggest share of women who were highly educated can be found in the group using male methods, supporting hypothesis H2, that high female power is associated with a higher likelihood of using male-body based methods. For men the greatest share of low education can also be found in the group using no or traditional methods, supporting hypothesis H1. The greatest share of high education can be found in the group using male methods, which is somewhat conflicting with hypothesis H2, because high male power could theoretically be related to transferring contraceptive responsibility. However, high education is assumed to be related to a more gender egalitarian attitude and a higher likelihood of sexual communication (Fennell, 2011), thus, there might be different mechanisms concerning education as a power indicator for men and for women. However, it needs to be noted that for both men and women the group using male or no or traditional methods is substantially smaller than the group using female methods.

Table 13: Absolute education, by contraceptive behaviour, pairfam wave 1, own calculations

	Female Methods		*Male Methods*		*No/Traditional Methods*	
Absolute Female Education	**Freq.**	**%**	**Freq.**	**%**	**Freq.**	**%**
Low Education	108	7.22	25	6.74	81	18.97
Middle Education	916	61.23	194	52.29	232	54.33
High Education	472	31.55	152	40.97	114	26.70
Total	**1,496**	**100.00**	**371**	**100.00**	**427**	**100.00**
Absolute Male Education						
Low Education	59	4.90	16	6.13	39	13.00
Middle Education	697	57.84	122	46.74	161	53.67
High Education	449	37.26	123	47.13	100	33.33
Total	**1,205**	**100.00**	**261**	**100.00**	**300**	**100.00**

Labour force status is used to measure *relative resources*. In table 7 it can be seen that in the majority of couples the man was the main breadwinner (55.05 %) and only a comparatively small share had a main female breadwinner (9.29 %). Since female labour force participation rose over time (Esping-Andersen, 2009) and working arrangements might depend on family size, cohort differences can be expected. Indeed, in appendix table A9 it can be seen that while the older cohort had a 66.83 % share of main male breadwinners, and 28.73 % equal statuses, in the younger cohort both male breadwinner arrangements and equal statuses made up for a little over 40 % each. Table 14 shows the distribution of 'relative' labour force status by contraceptive behaviour. In the group using no or traditional methods the highest share of male breadwinner arrangements and the lowest share of equal statuses can be found, in comparison to both other groups. This supports hypothesis H1 that gender un-equal couples are less likely to use any modern method. Looking at the groups using female or male methods, descriptively, hypothesis H2 is not supported, as the share of equal statuses and female breadwinners both was higher in the group using modern female methods and the share of male breadwinners was higher in the group using modern male methods.

Table 14: Distribution of 'relative' labour force status, by contraceptive behaviour, pairfam wave 1, own calculations

	Female Methods		*Male Methods*		*No/Traditional Methods*	
'Relative' Labour Force Status	**Freq.**	**%**	**Freq.**	**%**	**Freq.**	**%**
Equal Status	1,048	38.80	198	31.33	202	27.79
Male Breadwinner	1,373	50.83	389	61.55	473	65.06
Female Breadwinner	280	10.37	45	7.12	52	7.15
Total	**2,701**	**100.00**	**632**	**100.00**	**727**	**100.00**

Considering *gender ideology theory*, it is of interest whether male's or female's gender ideology is more influential for couples' contraceptive behaviour. Cohort differences concerning gender ideology are expected, as gender ideology is assumed to become more egalitarian in younger generations (Lachance-Grzela & Bouchard, 2010). Also, differences by contraceptive behaviour are of interest. In table 15 it can be seen that on average, women had a more egalitarian gender ideology than men in the sample. Also, the younger cohort was on average more gender egalitarian than the older cohort. Concerning contraceptive behaviour, the on average most traditional gender ideology can be found in the group using no or traditional methods, supporting hypothesis H1. The on average most egalitarian gender ideology can be found in the group using male methods, supporting hypothesis H2.

Table 15: Gender ideology by sex, cohort and contraceptive behaviour, pairfam wave 1, own calculations

gender_ideo	**Observations**	**Mean**	**Std. Dev.**
Male	1,766	4.21	0.99
Female	2,294	4.40	0.91
Cohort 2	1,874	4.35	0.96
Cohort 3	2,186	4.29	0.94
Female Modern Methods	2,701	4.32	0.94
Male Modern Methods	632	4.40	0.93
No or Traditional Methods	727	4.23	1.00

4.2. Linear Probability Models

Hypotheses H1 and H2 are tested separately within the *power theories* and *gender ideology theory* frameworks. Thereby, the relevant predictors are *division of housework, absolute education, 'relative' labour force status* and *gender ideology*. The control variables are included successively into the nested models.

4.2.1. Power Theories

Interactional Power

In table 16 the models estimating the probability to use any modern method of contraception as opposed to using no or traditional methods by *interactional power* are shown, operationalized by *division of housework*. In all models it can be seen that in comparison to the reference group *traditional* division, a *non-traditional* division of housework is connected to a higher likelihood of using any modern method, supporting hypothesis H1. Thereby, the effect is significant and largest in the first two models. When *cohort* is included (MM3), the effect becomes smaller and insignificant. This implies that cohort differences explain a part of the variance that was previously captured by interactional power. As can be seen in table A1, indeed respondents from cohort 3 performed a more traditional division of housework than respondents from cohort 2. When the number of children is included (MM5) the size again shrinks substantially implying that the effect of the division of housework on using modern methods is influenced by family size. In models MM1 and MM2, the coefficient of a non-traditional share is highly significant, indicating that in comparison to couples in which work is divided traditionally, a non-traditional share is related to a higher likelihood of using modern methods. Hence, hypothesis H1 cannot be rejected looking at these models, however, after adjusting for cohort, east/west differences and number of children, the effect becomes smaller and insignificant. This implies that these broader relationship dynamics are influential for the relationship of interactional power and modern contraceptive use. Looking at the interaction effect with sex of the anchor (MM6) the marginally significant interaction effect implies that indeed there a sex differences in reporting the share of housework (Nitsche & Grunow, 2016).

Table 16: Linear probability model: dependent variable: modern methods; independent variable: division of housework; pairfam wave 1, own calculations

	MM1	MM2	MM3	MM4	MM5	MM6
Non-Traditional	0.0329*	0.0321*	0.0162	0.0138	0.00163	0.0313
	(0.0145)	(0.0147)	(0.0151)	(0.0151)	(0.0155)	(0.0219)
Female		-0.00720	-0.0111	-0.0100	-0.00442	0.0143
		(0.0144)	(0.0143)	(0.0143)	(0.0144)	(0.0183)
1971-1973			-0.0800***	-0.0807***	-0.0597***	-0.0597***
			(0.0143)	(0.0143)	(0.0173)	(0.0173)
East				0.0571***	0.0635***	0.0638***
				(0.0165)	(0.0165)	(0.0166)
One Child					-0.0828***	-0.0824***
					(0.0197)	(0.0197)
Two Children +					-0.0531**	-0.0529**
					(0.0202)	(0.0202)
Non-Traditional# Female						-0.0533+
						(0.0291)
Intercept	0.793***	0.798***	0.855***	0.845***	0.875***	0.863***
	(0.00880)	(0.0127)	(0.0158)	(0.0161)	(0.0165)	(0.0182)
Observations	3197	3197	3197	3197	3197	3197

Standard errors in parentheses + $p < 0.1$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

In table 17 the dependent variable indicates whether the couple relies on modern female- or male-body based contraception. The coefficient of a non-traditional share changes its sign from the first two models to the last four. When only the division of housework and sex of the anchor are included, the likelihood of using male contraceptives is lower for couples who are non-traditionally sharing housework than in those sharing it traditionally. However, after controlling for cohort, east/west differences and number

of children (MC5), there is a significant higher likelihood to use male methods for couples performing a non-traditional share than for couples performing a traditional share, which supports hypothesis H2. It indicates that particularly cohort- and family size differences 'mask' the effect of interactional power and that after adjusting for them, a significant difference can be found. Looking at the model including the interaction effect with sex (MC6), no significant sex differences can be found, indicating that for male-body based contraceptive use it is not influential who reports the division of housework.

Concluding, hypothesis H1 cannot be rejected when looking at models MM1 and MM2. However, when looking at models MM3 to MM6 no significant group differences can be found, implying that cohort differences, east/west differences and number of children explain the variance of interactional power. Hence, conclusions need to be drawn cautiously. Hypothesis H2 cannot be rejected when looking at model MC5 because after adjusting for the co-variates more gender equal interactional power leads to a higher likelihood of using male contraceptives. These findings indicate that after adjusting for cohort, east/west and family size differences interactional power is especially decisive when it comes to the choice of which modern contraceptive, not whether to use modern contraceptives at all.

Table 17: Linear probability model: dependent variable: male contraception; independent variable: division of housework; pairfam wave 1, own calculations

	MC1	MC2	MC3	MC4	MC5	MC6
Non-Traditional	-0.0265	-0.0243	0.00369	0.00613	0.0399*	0.0257
	(0.0165)	(0.0167)	(0.0170)	(0.0170)	(0.0174)	(0.0245)
Female		0.0176	0.0235	0.0225	0.00709	-0.00221
		(0.0163)	(0.0161)	(0.0161)	(0.0161)	(0.0204)
1971-1973			0.126***	0.128***	0.0512**	0.0513**
			(0.0158)	(0.0158)	(0.0183)	(0.0183)
East				-0.0730***	-0.0739***	-0.0743***
				(0.0182)	(0.0182)	(0.0182)
One Child					0.102***	0.102***
					(0.0210)	(0.0210)
Two Children +					0.177***	0.177***
					(0.0217)	(0.0217)
Non-Traditional# Female						0.0257
						(0.0325)
Intercept	0.216***	0.205***	0.116***	0.129***	0.0755***	0.0815***
	(0.0100)	(0.0143)	(0.0169)	(0.0173)	(0.0177)	(0.0196)
Observations	2571	2571	2571	2571	2571	2571

Standard errors in parentheses $^{+}$ $p < 0.1$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Absolute and Relative Power

Derived from resource theory, two power indicators are *absolute resources*, operationalized by male and female *education* and *relative resources*, operationalized by *'relative' labour force status*. In table 18 models MM7 to MM13 show the estimated relationship between *absolute power* and modern methods use. In all models 'low education', in comparison to high education, is connected to a highly significant lower probability to use modern contraceptives, which is in line with previous research (Dereudde et al., 2017). Holding a 'middle education' in comparison to holding a high education is connected to a lower probability to use modern methods, but no significant difference can be found. The interaction effect is included (MM13) to investigate whether there is a difference in male's or female's absolute education and its association with contraceptive behaviour. As shown in figure 2, the interaction effect is insignificant, implying that for the relationship between absolute education and the choice of modern methods it does not matter whether men or women hold high absolute power. It can be seen that after adjusting for all co-variates, the predicted probability to use modern methods is significantly higher for middle and high educated respondents than for low educated ones. Even though the interaction is not significant it can be seen that the biggest variation between the sexes can be found for 'low education', indicating that low educated women have a lower probability of using modern methods than low educated men. This implies that for women low power is more decisive about modern

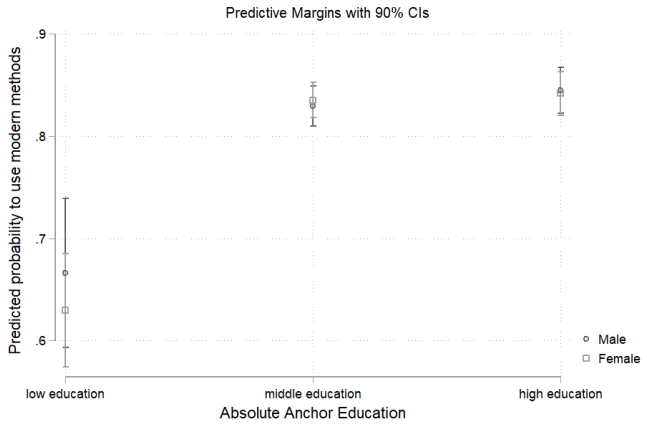
contraceptive use than for men. Concluding, for both men and women high absolute power is connected to a higher likelihood of using modern methods.

Table 18: Linear probability model: dependent variable: modern methods; independent variable: absolute education; pairfam wave 1, own calculations

	MM7	MM8	MM9	MM10	MM11	MM12	MM13
Low Education	-0.214***	-0.213***	-0.217***	-0.214***	-0.210***	-0.201***	-0.179***
	(0.0283)	(0.0283)	(0.0282)	(0.0282)	(0.0283)	(0.0286)	(0.0465)
Middle Education	-0.0175	-0.0170	-0.0153	-0.0161	-0.0142	-0.0105	-0.0156
	(0.0123)	(0.0123)	(0.0122)	(0.0122)	(0.0122)	(0.0123)	(0.0178)
Female		-0.00964	-0.00711	-0.00691	-0.00426	-0.000407	-0.00311
		(0.0120)	(0.0119)	(0.0119)	(0.0119)	(0.0121)	(0.0187)
1971-1973			-0.0953***	-0.0957***	-0.0848***	-0.0721***	-0.0723***
			(0.0117)	(0.0117)	(0.0124)	(0.0151)	(0.0151)
East				0.0296*	0.0300*	0.0350*	0.0351*
				(0.0145)	(0.0146)	(0.0146)	(0.0146)
Cohabitation					-0.0397**	-0.0179	-0.0179
					(0.0138)	(0.0146)	(0.0146)
One Child						-0.0684***	-0.0688***
						(0.0186)	(0.0187)
Two Children +						-0.0327+	-0.0330+
						(0.0185)	(0.0185)
Low Education # Female							-0.0332
							(0.0585)
Middle Education # Female							0.00917
							(0.0244)
Intercept	0.848***	0.853***	0.903***	0.897***	0.920***	0.915***	0.917***
	(0.00956)	(0.0114)	(0.0116)	(0.0118)	(0.0135)	(0.0137)	(0.0155)
Observations	4060	4060	4060	4060	4060	4060	4060

Standard errors in parentheses + $p < 0.1$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Figure 2: Predicted probability to use modern methods by absolute education and sex, based on MM13



In table 19, models MC7 to MC13 show that there is a highly significant lower probability to use modern male contraception for anchors who hold a 'middle education' in comparison to those holding a high education. 'Low education' in comparison to 'high education' is related to a lower predicted probability to use male contraception in all models but the effect is only significant when controlling for all co-variates (MC12). As the interaction effect is not significant (MC13), it does not seem to matter whether men or women hold high absolute power, which can be seen in figure 3. Even though there is no significant sex difference, it shows that in the group 'high education' women are more likely to use male contraceptives than men and in 'low education' men are more likely to use male contraception

than women. This could imply that for low power women are more likely to take contraceptive responsibility and for high power they are more likely to transfer it, whilst for men it is the other way around. It can be concluded from the models that the level of absolute power is relevant in predicting the choice of contraceptive method. Both highly educated women and men are more likely to use male contraceptives compared to respondents holding lower levels of education, indicating that high absolute power is related to a higher probability of male contraceptive use for both men and women.

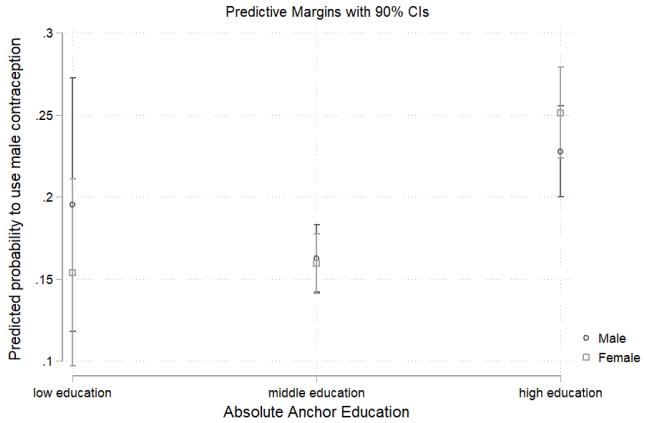
Concluding, absolute power is influential for contraceptive behaviour; however, it does not matter statistically whether men or women hold high power.

Table 19: Linear probability model: dependent variable: male contraception; independent variable: absolute education; pairfam wave 1, own calculations

	MC7	MC8	MC9	MC10	MC11	MC12	MC13
Low Education	-0.0328	-0.0356	-0.0329	-0.0378	-0.0412	-0.0715*	-0.0324
	(0.0302)	(0.0303)	(0.0305)	(0.0306)	(0.0305)	(0.0306)	(0.0500)
Middle Education	-0.0661***	-0.0674***	-0.0724***	-0.0708***	-0.0722***	-0.0796***	-0.0653**
	(0.0148)	(0.0148)	(0.0146)	(0.0146)	(0.0146)	(0.0145)	(0.0206)
Female		0.0238^{+}	0.0196	0.0193	0.0172	0.00442	0.0236
		(0.0136)	(0.0134)	(0.0134)	(0.0134)	(0.0135)	(0.0236)
1971-1973			0.130***	0.132***	0.123***	0.0585***	0.0583***
			(0.0133)	(0.0133)	(0.0140)	(0.0163)	(0.0163)
East				-0.0567***	-0.0573***	-0.0576***	-0.0578***
				(0.0160)	(0.0160)	(0.0160)	(0.0160)
Cohabitation					0.0291^{+}	-0.0240	-0.0246
					(0.0154)	(0.0158)	(0.0158)
One Child						0.0960***	0.0969***
						(0.0198)	(0.0198)
Two Children+						0.158***	0.159***
						(0.0201)	(0.0201)
Low Education # Female							-0.0651
							(0.0628)
Middle Education # Female							-0.0268
							(0.0288)
Intercept	0.230***	0.218***	0.156***	0.166***	0.150***	0.168***	0.158***
	(0.0122)	(0.0139)	(0.0141)	(0.0143)	(0.0165)	(0.0166)	(0.0192)
Observations	3333	3333	3333	3333	3333	3333	3333

Standard errors in parentheses $^{+}$ $p < 0.1$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Figure 3: Predicted probability to use male contraception by absolute education and sex, based on MC13



Looking at *relative power* and concerning modern methods, in all models in table 20 having a male breadwinner arrangement is connected to a significantly lower probability of using modern methods in

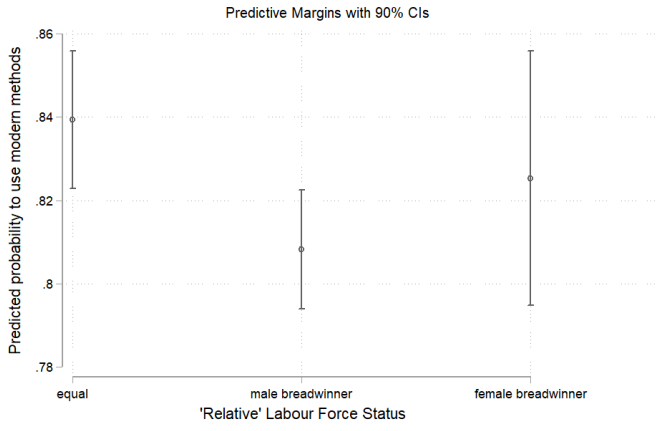
comparison to couples holding equal statuses. This supports hypothesis H1 that greater gender equality in form of equal relative power increases the likelihood of using modern contraceptives. Looking at female breadwinner arrangements in comparison to equal statuses yields no significant difference, even though after controlling for cohort the effect becomes negative, implying that only equal relative power is related to a higher likelihood of using modern methods. However, the group of female breadwinners is substantially smaller and coefficients have to be interpreted cautiously. Because no sex differences are expected in reporting the employment status and the predictor is on the couple-level the sex of the anchor and the interaction effect are not included. Figure 4 shows that 'equal status' arrangements have the highest predicted probability to use modern contraceptives also after adjusting for all co-variates, supporting hypothesis H1.

Table 20: Linear probability model: dependent variable: modern methods; independent variable: 'relative' labour force status; pairfam wave 1, own calculations

	MM14	MM15	MM16	MM17	MM18
Male Breadwinner	-0.0721***	-0.0545***	-0.0517***	-0.0475***	-0.0312*
	(0.0126)	(0.0129)	(0.0129)	(0.0130)	(0.0140)
Female Breadwinner	0.00157	-0.0126	-0.0119	-0.0153	-0.0141
	(0.0200)	(0.0199)	(0.0199)	(0.0200)	(0.0200)
1971-1973		-0.0801***	-0.0813***	-0.0711***	-0.0596***
		(0.0124)	(0.0124)	(0.0129)	(0.0152)
East			0.0341*	0.0349*	0.0414**
			(0.0146)	(0.0146)	(0.0147)
Cohabitation				-0.0423**	-0.0205
				(0.0139)	(0.0148)
One Child					-0.0698***
					(0.0192)
Two Children +					-0.0388*
					(0.0198)
Intercept	0.860***	0.895***	0.888***	0.914***	0.908***
	(0.00911)	(0.00978)	(0.0102)	(0.0126)	(0.0129)
Observations	4060	4060	4060	4060	4060

Standard errors in parentheses $^{+}$ $p < 0.1$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Figure 4: Predicted probability to use modern methods by 'relative' labour force status, based on MM18



In table 21, models MC14 to MC17 show that after controlling for cohort, east/west and cohabitation there is a significant difference between 'relative' labour force status arrangements. In those models, having a male breadwinner arrangement is connected to a higher probability of using male methods in reference to having equal statuses. This contradicts with hypothesis H2 and implies that greater male relative power leads men to take contraceptive responsibility as opposed to transfer it to the female partner. A reason for this could be that when women hold greater/equal relative resources in form of employment status the opportunity costs of pregnancy become greater because after childbirth women

are more likely than men to reduce paid working hours and perform more child care work (Kuehhirt, 2012). This could be why they want to hold contraceptive 'control' (i.e. 'contraceptive gatekeeping' (Fennell, 2011)) and rely on more effective modern female-body based contraception. This theory is backed up by the positive significant group difference of having one or more children in comparison to having no children. Another driver of this finding could be that one of the two male methods is vasectomy, which is usually performed after family planning is finished. Thus, persons who already have children are more likely to opt for this form of contraception. Hence, after controlling for the number of children, the effect of lower female and male relative power becomes negative and not significant, implying that family size takes some of the variance previously explained by 'relative' labour force status. When family size is adjusted for, the highest probability to use male methods can be found for equal relative power, which can be seen in figure 5 and supports hypothesis H2. It can also be seen that there is no significant group difference for female breadwinners as opposed to couples having equal statuses or a male breadwinner arrangement. Thus, it cannot be said whether higher female resources lead women to keep or transfer contraceptive responsibility in comparison to the other arrangements. Concluding, the effect of relative resources on male contraceptive use seems to be related to family size. After adjusting for it, 'equal status' is related to the highest predicted probability to use male methods. However, due to the non-significance and the change of signs the hypothesis cannot be accepted thoughtlessly and needs to be interpreted cautiously.

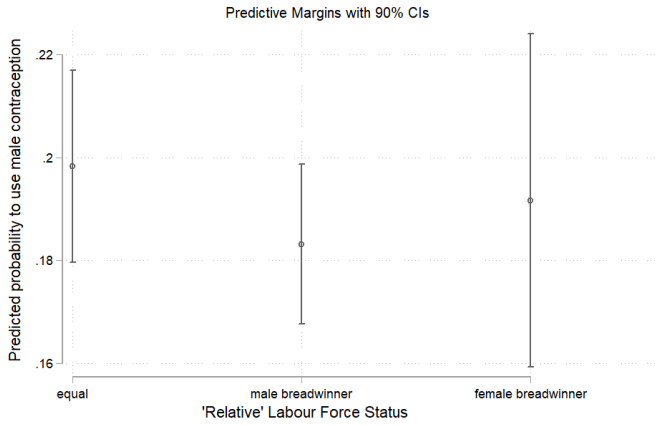
In conclusion, equal relative power seems to be positively related to modern method use and male contraception use; however, broader relationship dynamics like cohort affiliation, family size and cohabitation seem to influence the relationship of relative power and contraceptive behaviour.

Table 21: Linear probability model: dependent variable: male contraception; independent variable: 'relative' labour force status; pairfam wave 1, own calculations

	MC14	MC15	MC16	MC17	MC18
Male Breadwinner	0.0619***	0.0351*	0.0309*	0.0287*	-0.0151
	(0.0143)	(0.0144)	(0.0144)	(0.0144)	(0.0154)
Female Breadwinner	-0.0204	-0.000181	-0.00148	0.000276	-0.00663
	(0.0218)	(0.0216)	(0.0216)	(0.0217)	(0.0214)
1971-1973		0.119***	0.121***	0.116***	0.0608***
		(0.0138)	(0.0139)	(0.0145)	(0.0164)
East			-0.0567***	-0.0573***	-0.0609***
			(0.0160)	(0.0160)	(0.0160)
Cohabitation				0.0210	-0.0269+
				(0.0155)	(0.0160)
One Child					0.0913***
					(0.0205)
Two Children +					0.157***
					(0.0212)
Intercept	0.159***	0.111***	0.123***	0.110***	0.131***
	(0.0104)	(0.0111)	(0.0115)	(0.0150)	(0.0152)
Observations	3333	3333	3333	3333	3333

Standard errors in parentheses $^{+}$ $p < 0.1$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Figure 5: Predicted probability to use male contraception by 'relative' labour force status, based on MC18



4.2.2. Gender Ideology Theory

Looking at table 22, models MM19 to MM25 show the estimated relationship between *gender ideology* and the probability to use modern contraception. Since all main effects except the one in model MM25 including the interaction effect are positive and significant it can be interpreted that a more gender egalitarian attitude is connected to a higher probability of using modern methods, supporting hypothesis H1. Looking at the insignificant interaction effect, it does not seem to be influential whether it is the man's or the woman's attitude.

Table 22: Linear probability model: independent variable: modern methods; dependent variable: gender ideology; pairfam wave 1, own calculations

	MM19	MM20	MM21	MM22	MM23	MM24	MM25
Gender Ideology	0.0169*	0.0179**	0.0162*	0.0151*	0.0152*	0.0136*	0.0114
	(0.00657)	(0.00662)	(0.00659)	(0.00660)	(0.00659)	(0.00661)	(0.00925)
Female		-0.0197	-0.0170	-0.0165	-0.0130	-0.00720	-0.0254
		(0.0122)	(0.0121)	(0.0121)	(0.0121)	(0.0123)	(0.0587)
1971-1973			-0.0913***	-0.0920***	-0.0786***	-0.0596***	-0.0596***
			(0.0118)	(0.0118)	(0.0126)	(0.0152)	(0.0152)
East				0.0373*	0.0377*	0.0428**	0.0428**
				(0.0146)	(0.0146)	(0.0147)	(0.0147)
Cohabitation					-0.0487***	-0.0197	-0.0197
					(0.0139)	(0.0148)	(0.0148)
One Child						-0.0802***	-0.0800***
						(0.0186)	(0.0186)
Two Children+						-0.0498**	-0.0495**
						(0.0186)	(0.0186)
Female # Gender Ideology							0.00423
							(0.0131)
Intercept	0.748***	0.755***	0.810***	0.808***	0.837***	0.840***	0.849***
	(0.0294)	(0.0296)	(0.0301)	(0.0301)	(0.0308)	(0.0307)	(0.0414)
Observations	4060	4060	4060	4060	4060	4060	4060

Standard errors in parentheses $^{+}$ $p < 0.1$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Looking at table 23, models MC19 to MC25 show the estimated relationship between *gender ideology* and the usage of male contraception. For all models the effect is positive, but the size and the significance changes. In the model adjusted for all co-variates (MC24) the effect is largest and has the highest significance level. This implies that gender ideology is influenced by cohort differences, east/west differences, relationship commitment and family size. When those factors are adjusted for a more gender egalitarian attitude is connected to a higher likelihood of using male contraception, supporting hypothesis H2. Because the interaction effect included in MC25 is marginally significant, sex differences in the influence of gender ideology can be expected. In figure 6 it can be seen that the difference in the estimated probability to use male methods by gender ideology is greater for women

than for men. This implies that gender ideology is more important for women in deciding which modern methods to use than for men. A reason for this could be that women define contraceptive responsibility as a 'female sphere', that matches their feminine gender identity (Fennell, 2011). When gender egalitarian values are held by women, they may be more likely to give up their 'contraceptive gatekeeping' (Fennell, 2011).

Because the linearity assumption of *gender ideology* was questioned (3.5) figure 6 and 7 show the same model (MC25 and AMC32) with the difference that in the latter a quadratic term of *gender ideology* is included. Hence, the relationship becomes u-shaped. It can be seen that holding most traditional or most gender egalitarian values is connected to the highest predicted probability of using male contraception. An explanation for this could be that gender equality can also be connected to women being able to access and negotiate using female-body based methods (Bentley & Kavanagh, 2008). In situations of a very traditional gender ideology women might not be able to access modern female methods and men hold contraceptive control. However, the number of respondents holding the lowest value on gender ideology is substantially smaller, resulting in large confidence intervals. Again, sex differences can be seen, with women more likely to use male contraception in the most gender egalitarian ideology scenario.

Concluding, a more gender egalitarian ideology is positively associated with the probability of using modern and male contraceptive methods.

Table 23: Linear probability model: dependent variable: male contraception; independent variable: gender ideology; pairfam wave 1, own calculations

	MC19	MC20	MC21	MC22	MC23	MC24	MC25
Gender Ideology	0.0142*	0.0132+	0.0159*	0.0177*	0.0176*	0.0224**	0.0102
	(0.00719)	(0.00721)	(0.00719)	(0.00717)	(0.00717)	(0.00715)	(0.0101)
Female		0.0180	0.0132	0.0124	0.0106	-0.00340	-0.107+
		(0.0137)	(0.0135)	(0.0135)	(0.0135)	(0.0135)	(0.0623)
1971-1973			0.128***	0.131***	0.124***	0.0610***	0.0612***
			(0.0134)	(0.0134)	(0.0141)	(0.0164)	(0.0164)
East				-0.0626***	-0.0631***	-0.0628***	- 0.0628***
				(0.0159)	(0.0159)	(0.0160)	(0.0160)
Cohabitation					0.0240	-0.0284+	-0.0288+
					(0.0155)	(0.0159)	(0.0159)
One Child						0.0883***	0.0890***
						(0.0197)	(0.0197)
Two Children+						0.155***	0.156***
						(0.0202)	(0.0201)
Female # Gender Ideology							0.0240+
							(0.0142)
Intercept	0.128***	0.122***	0.0478	0.0514	0.0377	0.0302	0.0817+
	(0.0315)	(0.0319)	(0.0324)	(0.0324)	(0.0336)	(0.0335)	(0.0448)
Observations	3333	3333	3333	3333	3333	3333	3333

Standard errors in parentheses $^{+}$ $p < 0.1$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Figure 6: Predicted probability to use male contraception by gender ideology, based on MC25

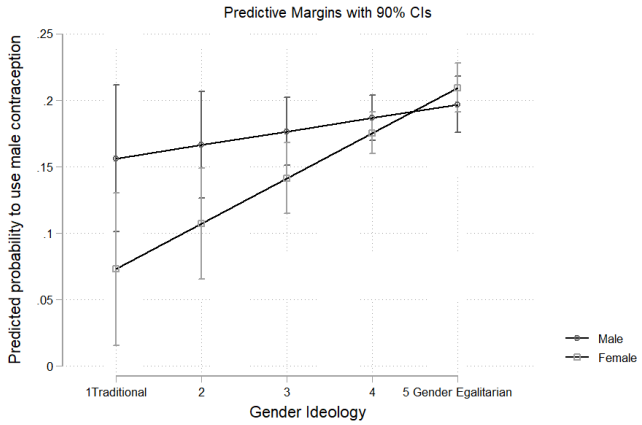
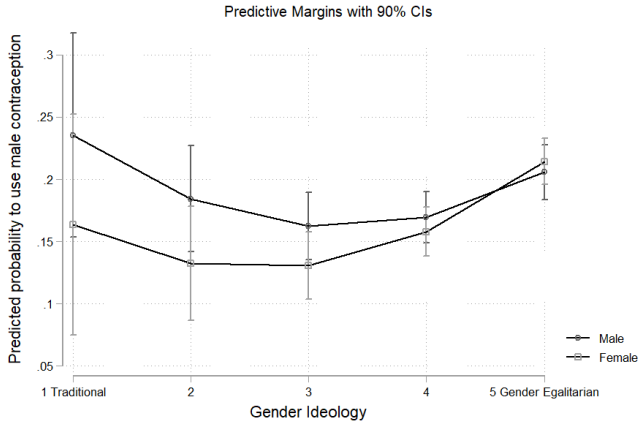


Figure 7: Predicted probability to use male contraception by gender ideology, based on MC32 (Table A10 appendix)



4.3. Robustness Checks

To check the linearity assumptions made in the linear probability models, all models are estimated as logistic regression models and can be found in appendix tables A11-A25. Significance and direction of the effects is matching, hence the results of the linear probability models are shown to be robust.

Because dual methods use can be seen as both 'sharing' responsibility or mainly female responsibility (Dereudde et al., 2017), in a robustness check the dependent variables were conceptualised without taking into account dual methods (appendix tables A26-A33). For all four predictors, results are shown to be robust, as effects are very similar in sign, size and significance. This indicates that conceptualising dual methods as a female responsibility is robust.

5. Discussion

5.1. Discussion

In this thesis I investigated whether the theoretical framework related to the *gendered division of labour* can be transferred to contraceptive behaviour in Germany. The research question was: *"How does gender equality within heterosexual romantic relationships influence the usage of modern male-body based contraception in Germany*?". Gender equality in this context was conceptualized within *power theories* and *gender ideology theory*. Power theories assume that interactional, relative or absolute power influence a partner's negotiating position within a relationship. Gender ideology theory assumes that a gender egalitarian attitude is connected to a higher level of couple-level gender equality. Greater gender equality in form of resources and gender egalitarian ideologies is connected to a more equal share of labour (Lachance-Grzela & Bouchard, 2010). This framework was transferred to contraceptive behaviour, as multiple researchers have stated that contraceptive behaviour is 'feminized' (Kimport, 2018a) and added a gendered dimension to contraceptive behaviour by identifying it as 'fertility work' (Bertotti, 2013) that is mainly performed by women. As Davis (2017) stated that to 'share' contraceptive responsibility couples could rely on modern male-body based contraceptives (i.e. condoms and vasectomy), a less feminized way of using contraception was conceptualized as relying on male methods. To test whether the conceptual framework of the *gendered division of labour* can be transferred to contraceptive behaviour, two hypotheses were derived from the theoretical background and previous empirical findings. The first hypothesis was that gender equality is related to an increased probability of using modern contraceptives, because this was found in previous research on the relationship of gender equality and contraceptive behaviour (Dereudde et al., 2016a; Looze et al., 2019). The second hypothesis was that gender equality is related to an increased probability of using male contraception. These two hypotheses were tested with predictors of *interactional*, *relative* and *absolute power* and *gender ideology*. I conducted linear probability models with wave 1 data of pairfam that was collected 2008 and 2009 in Germany.

By including this view in research on contraceptive behaviour, I addressed the research gap of considering the gendered dimension of contraception and broader relationship dynamics when it comes to couples' contraceptive choices.

To answer the research question, I tested the four predictors (i.e. interactional, absolute and relative power, gender ideology) of power theories and gender ideology theory separately. Looking at *interactional power* measured by the *division of housework*, the probability to use modern methods when sharing housework non-traditionally was significantly higher than when the woman does more, when not adjusting for the co-variates, supporting hypothesis H1. However, the first hypothesis cannot be accepted incautiously because cohort differences and the number of children seemed to account for the previously explained variance by division of housework. This could be explained by the fact that younger couples may be more likely to use modern contraceptives, as health and sex education expanded and focussed increasingly on effective modern methods (Looze et al., 2019). Additionally, cohort differences are related to a more equal division of housework (Lachance-Grzela & Bouchard, 2010). It was found that housework division after childbirth becomes more traditional (Kuehhirt, 2012) which could explain the highly significant lower probability to use modern contraceptives when having one or more children. Because the interaction effect with sex was significant the assumption that men and women report the share of housework differently (Nitsche & Grunow, 2016) cannot be rejected. Concerning male contraceptive use, significant differences by the division of housework could be found also after adjusting for the co-variates. Thereby, a non-traditional division was related to a significantly higher probability to use male methods in comparison to a traditional share after adjusting for co-variates, supporting hypothesis H2. This is supported by previous research: Dereudde et al. (2017) find that greater male involvement in housework is related to choosing vasectomy or condoms over female reversible contraceptives. Interestingly, before controlling for the co-variates, the coefficient of the non-traditional division was negative, implying that cohort differences and the number of children 'mask' the effect of interactional power when looking at male methods. Concluding, broader relationship dynamics like cohort affiliation, east/west differences and number of children are influential for the effects of interactional power on contraceptive behaviour. However, interactional power was influential

for contraceptive choices, and couples holding equal interactional power were more likely to use modern and male contraceptives than couples holding unequal interactional power.

Looking at *absolute resources* measured by *absolute education*, I found a significant influence on using modern contraceptives, since respondents who are lowly educated had a significantly lower probability to use modern methods than those who are highly educated. This finding matches previous research on the positive relationship between education and choosing modern methods (Dereuddre, 2016b). Looking at sex differences, the interaction effect between the sex of the respondent and the education was insignificant, implying that it does not matter for the effect of absolute power whether men or women hold high power. Matching to this finding, Dereudde et al. (2017) found that men's and women's education are equally important for the choice of contraceptive methods. Concluding, high power in form of education is associated with a higher likelihood of using modern methods, supporting hypothesis H1; however, it does not matter who holds the power. Nevertheless, the association could also be related to better knowledge of modern methods and more extensive sexual education (Looze et al., 2019) and not only relationship power. Looking at male contraception there was a significantly lower probability for persons in the category 'middle education' to use male methods in comparison to those who are highly educated. The same held for low educated persons even though the difference was only significant when adjusting for all co-variates. The interaction effect was not significant, implying no differences between men or women holding high absolute power. Hence, high absolute power could be associated with an increased likelihood of using male methods, supporting hypothesis H2, even though no significant sex difference could be found. Thereby, high education could be 'used' by women to shift contraceptive responsibility to the man, while high education from men could lead to a lower belief in rumours about for example vasectomies being 'emasculating' (Terry & Braun, 2011). Concluding, absolute power was influential for contraceptive behaviour; however, it did not matter statistically whether men or women held high power for modern and male method use.

Looking at *relative resources*, the *'relative' labour force status* was considered. The first hypothesis could not be rejected judging from the models, as having a male breadwinner arrangement significantly lowered the probability to use modern methods, also after adjusting for all relevant co-variates. Having a female breadwinner arrangement compared to holding equal statuses was also related to a lower probability of using modern methods; however, the effect was not significant. This somewhat conflicting finding could result from the fact that the group of female breadwinners was substantially smaller than the other groups (see table 7). Holding equal statuses was related to the highest probability of using modern methods, supporting hypothesis H1. Looking at male contraception, after adjusting for all control variables the effects of both male and female breadwinner arrangements were negative in reference to holding equal statuses, supporting hypothesis H2; however, the effects were not significant. Before adjusting for the number of children there was a significant group difference between 'male breadwinners' and 'equal statuses', with male breadwinners being more likely to use male methods. This could result from the fact that male breadwinner arrangements are more common in families with children (Kuehhirt, 2012), making a vasectomy more likely as family planning might already be finished. Also, in male breadwinner arrangements, opportunity costs of pregnancy are not as high for women, so they might not engage in 'contraceptive gatekeeping' (Fennell, 2011). As a way to 'do gender' men with higher relative power might take contraceptive responsibility as a way to 'protect' their female partner (Fennell, 2011). In contrast, in female breadwinner arrangements women might engage in 'contraceptive gatekeeping' as opportunity costs of pregnancy are higher for them. Concluding, hypothesis H2 needed to be rejected judging from those models, however, after also controlling for the number of children, the effect signs showed in the expected direction, supporting hypothesis H2. Hence, an association between equal relative power and a higher likelihood of using modern and male methods could be found. As for interactional power, it can be concluded that for relative power dynamics, other relationship aspects like cohabitation, number of children and socialization were highly influential.

Judging from a *power theories perspective*, equal power within a heterosexual relationship was positively influential for modern contraceptive use, supporting hypothesis H1. Concerning hypothesis H2, equal interactional and relative power and high absolute power was related to a higher probability of using male methods, supporting the hypothesis, even though for relative power the effect was not significant. Relationship dynamics like cohabitation, family size, socialization with regard to east/west

differences and cohort affiliation need to be taken into account as well, as they seem to be influential for how power mechanisms work.

Looking at *gender ideology theory* measured by *gender ideology*, hypothesis H1 could not be rejected from the models. Also after adjusting for all relevant co-variates the effect remained significant and positive. This implies that more gender egalitarian values are connected to a higher likelihood of using modern methods. There was no significant difference between men and women holding different levels of gender ideology, implying that it is not influential who holds an egalitarian ideology. Looking at male contraceptives and gender ideology a significant positive effect for all models was found, supporting hypothesis H2. After adjusting for all relevant co-variates the effect of gender ideology was greatest, implying that cohort-, east/west-, commitment- and family-differences influence the effect of gender ideology when not adjusting for them. This applied for specifying the relationship as linear or quadratic. There were significant sex differences when including the interaction effect, implying that the effect of gender ideology is positive for both sexes, but is greater for women. This could be explained by the fact that feminine gender ideals are connected to contraceptive responsibilities (Fennell, 2011), so women with traditional values may feel more inclined to take responsibility than women with gender egalitarian values. Hence, contraception itself might socially be more connected to feminine gender ideals and gender ideology therefore more influential for women's behaviour. Concluding, a more gender egalitarian ideology was positively associated with modern and male method use.

I showed that different relationship mechanisms seem to be operating when deciding for a contraceptive method. Thereby, power, gender ideology and broader relationship dynamics were influential and using a multi-dimensional perspective allowed to get better insights of contraceptive behaviour. Gender equality as conceptualized in this thesis was found to be positively related to modern method use, and, to answer the research question, to male-body based contraceptive use in Germany. While it was fruitful to apply predictors of the gendered division of labour to contraceptive behaviour, partly conflicting findings show that different conceptualisations of gender equality operate differently and that contraceptive behaviour is complex and influenced by multiple individual-, couple- and macro-level variables (Dereuddre et al., 2017; Looze et al., 2019).

5.2. Strengths and Limitations

The greatest strength of the thesis can be found in the *exploratory framework*: to my best knowledge applying theories of the gendered division of housework and testing them has not yet been done in the German context and only few studies have investigated power theories and gender ideology with regard to contraceptive behaviour (Dereuddre et al., 2017; Grady et al., 2010). Hence, this thesis provides first insights into possible mechanisms and sets a theoretical framework for further research. At the same time, applying the framework of the gendered division of labour to contraceptive behaviour led to difficulties because contraceptive decisions are complex and 'fertility work' is different to housework. Thereby, the assumption that contraceptive responsibility is an indication of lower power and an avoidable relationship task is questionable, because holding contraceptive responsibility could also be an indication of higher power and independence (Dereuddre et al., 2017) and something that is not desired by women to transfer to the male partner (Fennell, 2011). One reason for this could be that women want to hold contraceptive responsibility as unwanted pregnancy bears higher risks for women (Fennell, 2011). Another reason why woman could want to keep contraceptive control is because women might not trust men to correctly use contraceptives (Eberhardt et al., 2009) or that they fear men could actively stop the contraceptives to work as symbol of power (e.g. practices like 'stealthing' where the man non-consensually removes the condom during intercourse (Brodsky, 2017)). However, a strength of the analysis is that it also takes into account men's influence in contraceptive decisions, since men's reproductive preferences might not be met if the women holds complete control of contraception (Davis, 2017). Another limitation to the theoretical assumptions is that while housework can be performed by each partner independently from the sex, a much broader variety of modern female-

body based contraceptives is available. Additionally, reversible female methods are more effective than reversible male methods (WHO, 2018) which makes it hard to compare them. Hence, even in situations in which both partners prefer to 'share' contraceptive responsibility and men would agree to use male-body based methods, female methods might be preferred for reasons of effectiveness. Another limitation to the conceptualisation is that STD-protection was not taken into account, as different mechanisms and motivations for condom use were expected (Brown, 2015). Finally, the overall construct of 'gender equality' is a very broad, complex and conflictingly defined concept, that in case of this thesis was operationalised by power and ideology, but has more dimensions in the literature (Krzaklewska, 2014).

Methodologically, some limitations can be identified. As the analyses were done *cross-sectionally*, no causal mechanisms could be detected. Because neither causal nor temporal ordering was done, reversed causality and a 'feedback bias' are possible, as not only ideology and power dynamics can influence behaviour but also the other way around (Nitsche & Grunow, 2016). Also, it could not be accounted for that couples' contraceptive behaviour might change over time while it is already known that the division of housework differs over the course of a relationship (Nitsche & Grunow, 2016). Additionally, it needs to be criticised that there was a possible *selectivity bias* in the analytic sample: because of the data structure, only two birth cohorts were included, therefore only two age groups were in the data, masking contraceptive behaviour of younger and older people. Vasectomies are most common for older men as they are mostly done after family planning is finished (Terry & Braun, 2011), but the oldest age group in the data were 34 to 38 years at the time of the interview. Thus, cases in which couples would opt for vasectomy because of their gender ideology or power dynamics could be underrepresented, as they might not have finished their family planning by the time of the interview. Also, persons who claimed that they tried to conceive within the last twelve months were excluded from the sample, possibly excluding highly educated, cohabitating couples with an egalitarian gender ideology. Due to a substantial loss of information, for absolute and relative resources only absolute education and 'relative' labour force status was looked at, which could mask effects of relative and absolute income. Another limitation of the data is that it was collected in 2008/2009. Since then, criticism of hormonal contraception has become more pronounced and awareness for side effects has increased (Guen et al., 2017). Thus, reasons to avoid contraceptive responsibility and take side effects into account might not have been as prominent by the time of the data collection. Additionally, in Germany prominent petitions like "better birth control" (BetterBirthControl, 2020) have recently drawn attention to the fact that most contraceptives are female-body based and connected to a variety of side effects. Hence, societal awareness of disadvantages concerning birth control might be bigger now than in 2008, and couples might have more to negotiate about. However, the analysis was the first to examine the theoretical micro-level mechanisms which are assumed to operate in other developed countries in Germany as a single-country context. This builds the framework for further research in other countries and with other data.

5.3. Conclusion and Outlook

Concluding, I showed that power, gender ideology and relationship dynamics significantly influence couples' contraceptive choices and should thus be taken into account when researching contraceptive behaviour. When conceptualising contraceptive responsibility as fertility work, different levels of gender equality in form of power and gender ideology lead to differences in choosing modern male or female methods. Thereby, gender equality was found to be positively associated with modern and male method contraceptive use. Hence, the gendered dimension of contraceptive responsibility cannot be neglected when talking about SRHR and contraception.

When discussing the strengths and limitations of the previous theoretical and empirical analysis, some implications for further research can be derived. Firstly, the framework should be applied in new analyses with more recent data to capture developments of reproductive health awareness. Thereby, a longitudinal approach could allow for temporal and causal ordering and thus, examining the theories

more fruitfully. Additionally, the analysis should be performed in multiple countries, to create external validity. Data sets should include a greater variety of age groups, especially to investigate sterilization, because usually older persons who already finished their family planning opt for permanent contraception. If the data allows for it, further research should go beyond differentiating between female- and male-body based methods and investigate differences in couples opting for hormonal, reversible or permanent methods. Also, traditional methods should not necessarily be excluded from the analysis because they also offer an opportunity to protect against unwanted pregnancies but do not involve the risk of side effects and it has been found that some highly educated, young women start to opt for traditional methods (Grady et al., 2010). Mechanisms of dual use should be investigated further as it could be conceptualised as 'sharing' contraceptive responsibility (Dereuddre et al., 2017). Looking at the different predictors, some changes in the conceptualisation might be fruitful for further analyses. Gender ideology could be looked at in terms of matching/mismatching attitudes within couples as it has been found that mismatching gender ideologies influence the gendered division of labour (Nitsche & Grunow, 2018). In cases of mismatching gender ideologies it would be interesting to investigate whether men's or women's attitudes are more influential. Also, relative and absolute income could be used as a predictor for resources, because actual income might influence power differently than labour force status or education. Once more modern male contraceptives are available, further research should investigate contraceptive decision-making within couples, as male and female methods are more comparable then.

A political and medical need can be identified to research on further male contraceptives because it was shown that both women and men are willing to take contraceptive responsibility (Eberhardt et al., 2009). In order to 'share' contraceptive responsibility and meet couples' preferences a greater and more effective variety of male methods should be available. Existing hormonal and non-hormonal male methods like RESUG, Vasagel and thermal contraception are rated as promising, but lack money and pharma-industrial support to finance large clinical trials (Murdoch & Goldberg, 2014). Policies should support the access and development of safe and effective modern male-body based methods by supporting the research on it financially and giving it more public attention. Furthermore, sexual health education should inform about advantages and disadvantages of all available methods and clinicians should not only take into account female hormonal methods when advising their clients (Kimport, 2018a). Hence, female and male preferences should be taken into account when informing about birth control. In order to 'share' contraceptive responsibility, opportunity costs of unwanted pregnancy should be divided more equally between women and men. Hence, opportunity costs of pregnancy institutionally should be reduced for women for example by policies involving the father more into childcare work (e.g. parental leave 'Daddy-Month') or establishing more, accessible childcare facilities (Esping-Andersen, 2009). Concluding, the gendered dimension of contraception in form of fertility work should be taken into account when researching, developing, prescribing or teaching about SRHR and contraceptive methods.

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Appendix

Table of contents

Appendix A: Descriptive Tables

A 1: Ethical considerations concerning the pairfam data; own reflection

Reliability of the data	It can be assumed that the data is of high quality as multiple peer reviewed researchers (Brüderl et al., 2020a) and multiple universities (namely: University of Bremen, Chemnitz University of Technology, University of Mannheim, Ludwig-Maximilians University of Munich) as well as the German Research Foundation (DFG) are involved in the data collection process and items are orientated on previous research (Huinink et al., 2011). Furthermore, respondents of the three birth cohorts were selected randomly (Huinink et al., 2011).
Traceability of observations	The data consists out of a randomised sample of three birth cohorts and respondents are identified with anonymous identifiers. Because of the multi-respondent design, parents, partners and children of the anchors are also interviewed, which gives more information about the respondents and makes it more susceptible to identifying respondents. However, as names are anonymised and only the 'Bundesland' [federal state] is indicated, it is still very unlikely that observations can be traced. To sample the population, local population registers were used to sample the population, whereby 25 municipalities refused to provide addresses to pairfam (Brüderl et al., 2018).
Informed consent	Subjects did not individually agree to the data being used in this study; however, they agreed on it being used in further research when answering to the questionnaire. As I cannot get informed consent by respondents myself, I need to rely on the data collection process of pairfam to have collected the informed consent appropriately.
Usage and confidentiality	"The data collected by the German Family Panel pairfam are accessible to the scientific community as scientific use file for secondary analyses" (pairfam, 2021). Thereby, researchers who want to use the data have to request it via an application form only for independent, scientific purposes. My supervisor Prof. Dr. Hank received the permission to hand me the data to use it for my master thesis after I made a request to pairfam. Pairfam received an ethical compliance by the Ethics Committee of the University of Cologne and can thus be rated confidential (pairfam, 2021). Additionally, I handled the data sensitively and confidentially.

A 2: List of pairfam items used to create variables (pairfam group, 2020)

Variable name thesis	**Item name pairfam**
contraceptives	sex5; sex6i1, sex6i2, sex6i3, sex6i4, sex6i5, sex6i6, sex6i7, sex6i8, sex6i9, sex6i10, sex6i11
division of housework	pa14i1
education	isced2
'relative' labour force status	lfs, plfs
gender ideology	val1i4
sex	sex_gen
cohort	cohort
east/west	east
cohabitation	sd7e1
number of children	nkidsp

A 3: Calculated relative income in percent with merged anchor and partner data sets, pairfam wave 1, own calculations

Variable	**Obs.**	**Mean**	**Std.Dev.**	**Min./Max**
Relative income	714	34.26	19.32	0/100

A 4: 'Absolute' female and male labour force status, pairfam wave 1, own calculations

	Female		*Male*	
'Absolute' Labour Force Status	**Freq.**	**%**	**Freq.**	**%**
Not Working	1,336	32.91	500	12.32
Vocational Training	151	3.72	60	1.48
Full-Time/Self-Employed	1,398	34.43	3,304	81.38
Part-Time/Marginal/Other	1,175	28.94	196	4.83
Total	**4,060**	**100.00**	**4,060**	**100.00**

A 5: Distribution of cohabitation, by cohort, pairfam wave 1, own calculations

	Cohort 2		*Cohort 3*	
Cohabitation	**Freq.**	**%**	**Freq.**	**%**
No Cohabitation	670	35.75	180	8.23
Cohabitation	1,204	64.25	2,006	91.77
Total	**1,874**	**100.00**	**2,186**	**100.00**

A 6: Distribution of number of children, by cohort, pairfam wave 1, own calculations

	Cohort 2		*Cohort 3*	
Number of children	**Freq.**	**%**	**Freq.**	**%**
No Children	1,364	72.79	473	21.64
One Child	329	17.56	514	23.51
Two Children+	181	9.66	1,199	54.85
Total	**1,874**	**100.00**	**2,186**	**100.00**

A 7: Regression equations for linear probability models shown in part 4

MM = Modern methods; MC = male contraception; X=Vector of Covariates

Interactional Power:

$P(MM/MC=1|IP,X) = ß_0 + ß_1 InteractionalPower + ß_2 Sex + ß_3 InteractionalPower\#Sex + ß_4 Covariates + \varepsilon$

Absolute Power:

$P(MM/MC=1|AP,X) = ß_0 + ß_1 AbsolutePower + ß_2 Sex + ß_3 AbsolutePower\#Sex + ß_4 Covariates + \varepsilon$

Relative Power:

$P(MM/MC=1|RP,X) = ß_0 + ß_1 RelativePower + ß_2 Covariates + \varepsilon$

Gender Ideology Theory:

$P(MM/MC=1|GI,X) = ß_0 + ß_1 GenderIdeology + ß_2 Sex + ß_3 GenderIdeology\#Sex + ß_4 Covariates + \varepsilon$

A 8: Division of housework, by cohort, pairfam wave 1, own calculations

	Cohort 2		*Cohort 3*	
Division of Housework	**Freq.**	**%**	**Freq.**	**%**
Traditional	658	54.83	1,464	73.31
Non-Traditional	542	45.17	533	26.69
Total	**1,200**	**100.00**	**1,997**	**100.00**

A 9: 'Relative' labour force status, by cohort, pairfam wave 1, own calculations

	Cohort 2		*Cohort 3*	
'Relative' Labour Force Status	**Freq.**	**%**	**Freq.**	**%**
Equal Status	820	43.76	628	28.73
Male Breadwinner	774	41.30	1,461	66.83
Female Breadwinner	280	14.94	97	4.44
Total	**1,874**	**100.00**	**2,186**	**100.00**

Appendix B: Linear Probability Models

A 10: Linear probability model; dependent variable: male contraception; independent variable: gender ideology; non-linear, pairfam wave 1, own calculations

	MC26	MC27	MC28	MC29	MC30	MC31	MC32
Gender Ideology	-0.0708	-0.0691	-0.0919^{+}	-0.0911^{+}	-0.0915^{+}	-0.0920^{+}	-0.0948*
	(0.0487)	(0.0487)	(0.0483)	(0.0482)	(0.0483)	(0.0478)	(0.0479)
Gender Ideology^2	0.0116^{+}	0.0112^{+}	0.0147*	0.0148*	0.0149*	0.0156*	0.0146*
	(0.00651)	(0.00651)	(0.00645)	(0.00644)	(0.00644)	(0.00638)	(0.00643)
Female		0.0169	0.0117	0.0109	0.00907	-0.00514	-0.0922
		(0.0136)	(0.0135)	(0.0135)	(0.0135)	(0.0135)	(0.0621)
1971-1973			0.130***	0.132***	0.126***	0.0625***	0.0626***
			(0.0134)	(0.0134)	(0.0141)	(0.0164)	(0.0164)
East				-0.0629***	-0.0634***	-0.0631***	-0.0631***
				(0.0159)	(0.0159)	(0.0159)	(0.0159)
Cohabitation					0.0242	-0.0285^{+}	-0.0289^{+}
					(0.0155)	(0.0159)	(0.0159)
One Child						0.0892***	0.0897***
						(0.0197)	(0.0197)
Two Children+						0.155***	0.157***
						(0.0201)	(0.0201)
Female # Gender Ideology							0.0201
							(0.0141)
Intercept	0.269**	0.259**	0.226**	0.232**	0.218*	0.220*	0.250**
	(0.0869)	(0.0870)	(0.0864)	(0.0864)	(0.0866)	(0.0858)	(0.0887)
Observations	3333	3333	3333	3333	3333	3333	3333

Standard errors in parentheses $^{+}$ $p < 0.1$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Appendix C: Robustness Checks: Logistic Regression Models

Note on the robustness check: Logistic regression models were calculated identically to the linear probability models. Because the coefficients for logistic regressions are in log-odds which cannot be interpreted easily, the *average marginal effects* are shown here. They correspond to the coefficients of the linear probability models, as the show the average difference in predicted probabilities for categorical variables. The average marginal models for the models including the sex interaction effect are not included, as the coefficients are not comparable. Those models will be shown graphically.

Interactional Power

A 11: Average marginal effects; dependent variable: modern methods; independent variable: division of housework; pairfam wave 1, own calculations

	AMM1	AMM2	AMM3	AMM4	AMM5
Non-traditional	0.0329*	0.0322*	0.0165	0.0141	0.00145
	(0.0145)	(0.0146)	(0.0151)	(0.0152)	(0.0159)
Female		-0.00722	-0.0111	-0.00984	-0.00462
		(0.0143)	(0.0142)	(0.0142)	(0.0143)
1971-1973			-0.0802***	-0.0808***	-0.0601***
			(0.0141)	(0.0141)	(0.0161)
East				0.0571***	0.0625***
				(0.0165)	(0.0162)
One Child					-0.0868***
					(0.0198)
Two Children+					-0.0553**
					(0.0184)
Observations	3197	3197	3197	3197	3197

Standard errors in parentheses $^{+}$ $p < 0.1$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

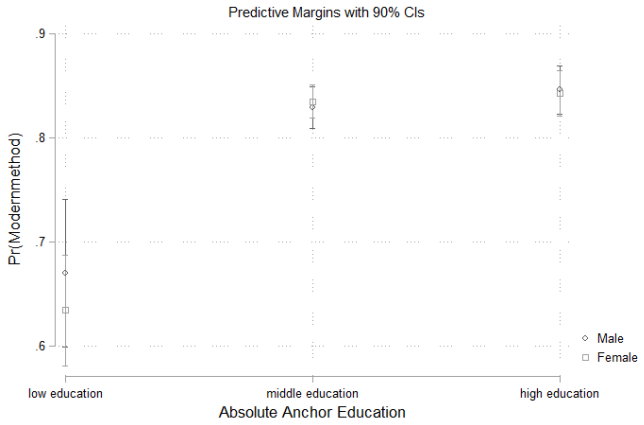
A 12: Average marginal effects; dependent variable: male contraception; independent variable: division of housework; pairfam wave 1,own calculations

	AMC1	AMC2	AMC3	AMC4	AMC5
Non-traditional	-0.0265	-0.0243	0.00368	0.00660	0.0441*
	(0.0165)	(0.0167)	(0.0174)	(0.0175)	(0.0185)
Female		0.0176	0.0235	0.0221	0.00725
		(0.0162)	(0.0160)	(0.0160)	(0.0160)
1971-1973			0.126***	0.128***	0.0533**
			(0.0156)	(0.0156)	(0.0189)
East				-0.0725***	-0.0739***
				(0.0179)	(0.0178)
One Child					0.105***
					(0.0203)
Two Children+					0.176***
					(0.0210)
Observations	2571	2571	2571	2571	2571

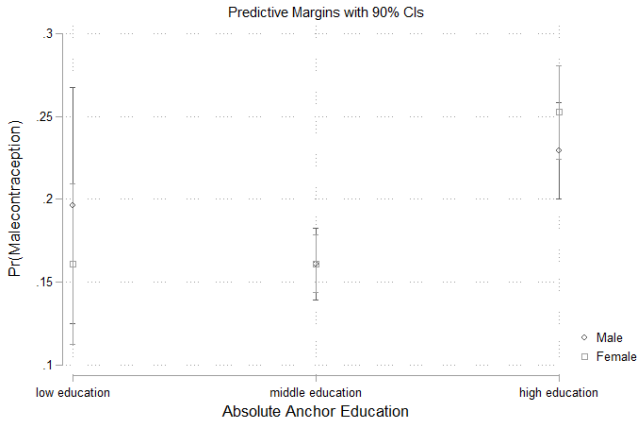
Standard errors in parentheses $^{+}$ $p < 0.1$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Absolute Power

A 13: Predicted probability to use modern methods, by absolute education and sex, with interaction effect; model not shown



A 14: Predicted probability to use male contraception, by absolute education and sex, with interaction effect; model not shown



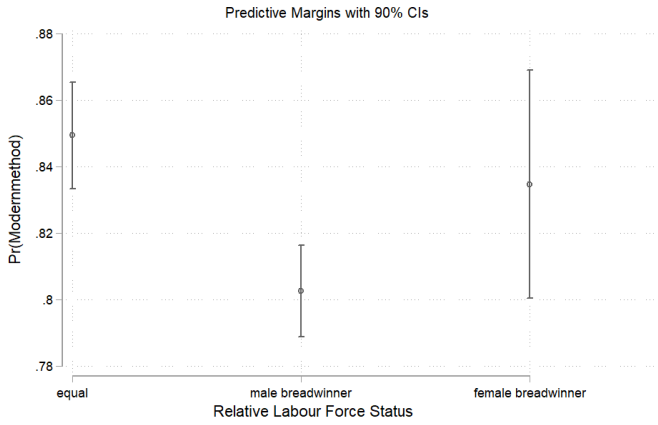
Relative Power

A 15: Average marginal effects; dependent variable: modern methods; independent variable: 'relative' labour force status; pairfam wave 1, own calculations

	AMM6	AMM7	AMM8	AMM9	AMM10
male breadwinner	-0.0721***	-0.0547***	-0.0515***	-0.0468***	-0.0309*
	(0.0126)	(0.0128)	(0.0129)	(0.0131)	(0.0143)
female breadwinner	0.00157	-0.0119	-0.0111	-0.0147	-0.0136
	(0.0200)	(0.0221)	(0.0222)	(0.0228)	(0.0236)
1971-1973		-0.0804***	-0.0813***	-0.0701***	-0.0594***
		(0.0123)	(0.0123)	(0.0128)	(0.0141)
East			0.0332*	0.0338*	0.0396**
			(0.0147)	(0.0147)	(0.0145)
Cohabitation				-0.0479**	-0.0260
				(0.0155)	(0.0182)
One Child					-0.0703***
					(0.0195)
Two Children +					-0.0384*
					(0.0181)
Observations	4060	4060	4060	4060	4060

Standard errors in parentheses $^{+}$ $p < 0.1$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

A 16: Predicted probability to use modern methods, by 'relative' labour force status, based on AMM10

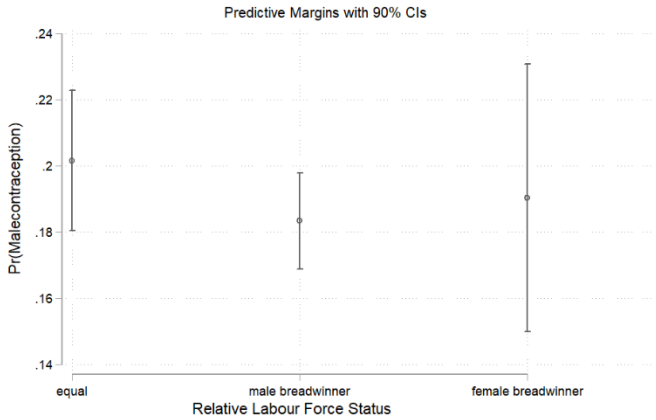


A 17: Average marginal effects; dependent variable: male contraception; independent variable: 'relative' labour force status; pairfam wave 1, own calculations

	AMC6	AMC7	AMC8	AMC9	AMC10
male breadwinner	0.0619***	0.0350*	0.0294*	0.0269+	-0.0182
	(0.0143)	(0.0145)	(0.0147)	(0.0148)	(0.0164)
female breadwinner	-0.0204	-0.00205	-0.00353	-0.00188	-0.0112
	(0.0218)	(0.0248)	(0.0250)	(0.0253)	(0.0270)
1971-1973		0.119***	0.121***	0.115***	0.0628***
		(0.0139)	(0.0139)	(0.0146)	(0.0164)
East			-0.0551***	-0.0556***	-0.0603***
			(0.0157)	(0.0157)	(0.0155)
Cohabitation				0.0239	-0.0364
				(0.0179)	(0.0229)
One Child					0.0969***
					(0.0215)
Two Children +					0.158***
					(0.0227)
Observations	3333	3333	3333	3333	3333

Standard errors in parentheses $^{+}$ $p < 0.1$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

A 18: Predicted probability to use male contraception, by 'relative' labour force status, based on AMC10



Gender Ideology Theory

A 19: Average marginal effects; dependent variable: modern methods; independent variable: gender ideology; pairfam wave 1; one calculations

	AMM11	AMM12	AMM13	AMM14	AMM15	AMM16
Gender Ideology	0.0161**	0.0171**	0.0155*	0.0144*	0.0146*	0.0131*
	(0.00606)	(0.00608)	(0.00608)	(0.00609)	(0.00608)	(0.00610)
Female		-0.0196	-0.0167	-0.0159	-0.0127	-0.00721
		(0.0121)	(0.0120)	(0.0120)	(0.0121)	(0.0122)
1971-1973			-0.0913***	-0.0920***	-0.0776***	-0.0597***
			(0.0118)	(0.0118)	(0.0125)	(0.0140)
East				0.0371*	0.0373*	0.0419**
				(0.0145)	(0.0145)	(0.0143)
Cohabitation					-0.0541***	-0.0255
					(0.0150)	(0.0182)
One Child						-0.0809***
						(0.0186)
Two Children+						-0.0486**
						(0.0169)
Observations	4060	4060	4060	4060	4060	4060

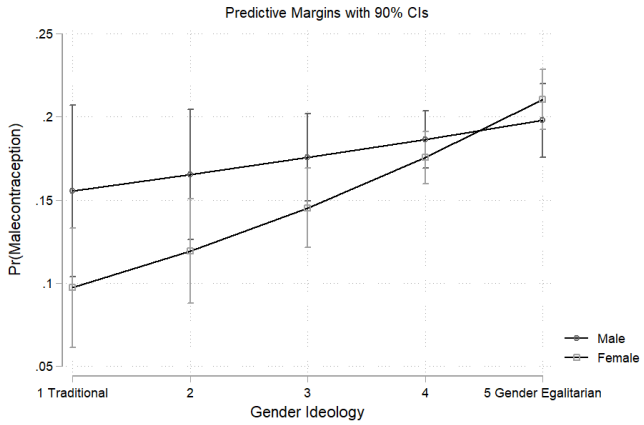
Standard errors in parentheses $^{+}$ $p < 0.1$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

A 20: Average marginal effects; dependent variable: male contraception; independent variable: gender ideology; pairfam wave 1, own calculations

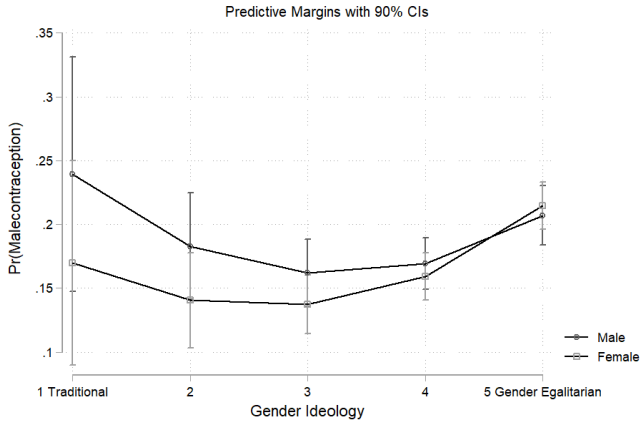
	AMC11	AMC12	AMC13	AMC14	AMC15	AMC16
Gender Ideology	0.0147+	0.0137+	0.0168*	0.0188*	0.0186*	0.0235**
	(0.00752)	(0.00755)	(0.00751)	(0.00752)	(0.00751)	(0.00748)
Female		0.0180	0.0135	0.0122	0.0107	-0.00277
		(0.0137)	(0.0135)	(0.0135)	(0.0136)	(0.0136)
1971-1973			0.129***	0.131***	0.123***	0.0631***
			(0.0133)	(0.0133)	(0.0142)	(0.0164)
East				-0.0613***	-0.0614***	-0.0616***
				(0.0154)	(0.0153)	(0.0153)
Cohabitation					0.0270	-0.0383+
					(0.0176)	(0.0228)
One Child						0.0928***
						(0.0206)
Two Children+						0.154***
						(0.0213)
Observations	3333	3333	3333	3333	3333	3333

Standard errors in parentheses $^{+}$ $p < 0.1$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

A 21: Predicted probability to use male contraception, by gender ideology and sex; interaction effect; model not shown



A 22: Predicted probability to use male contraception, by gender ideology and sex; non-linear, interaction effect; model not shown



Appendix D: Robustness Check: Without Dual Methods

To test the robustness of the conceptualisation of the dependent variables, respondents using 'dual methods' (610 cases) were deleted from the sample to calculate linear probability models.

Interactional Power

A 23: Linear probability model; dependent variable: modern methods; independent variable: division of housework; pairfam wave 1, own calculations

	AMM17	AMM18	AMM19	AMM20	AMM21	AMM22
Non-traditional	0.0329*	0.0321*	0.0162	0.0138	0.00163	0.0313
	(0.0145)	(0.0147)	(0.0151)	(0.0151)	(0.0155)	(0.0219)
Female		-0.00720	-0.0111	-0.0100	-0.00442	0.0143
		(0.0144)	(0.0143)	(0.0143)	(0.0144)	(0.0183)
1971-1973			-0.0800***	-0.0807***	-0.0597***	-0.0597***
			(0.0143)	(0.0143)	(0.0173)	(0.0173)
East				0.0571***	0.0635***	0.0638***
				(0.0165)	(0.0165)	(0.0166)
One Child					-0.0828***	-0.0824***
					(0.0197)	(0.0197)
Two Children+					-0.0531**	-0.0529**
					(0.0202)	(0.0202)
Non-traditional # Female						-0.0533+
						(0.0291)
Intercept	0.793***	0.798***	0.855***	0.845***	0.875***	0.863***
	(0.00880)	(0.0127)	(0.0158)	(0.0161)	(0.0165)	(0.0182)
Observations	3197	3197	3197	3197	3197	3197

Standard errors in parentheses + $p < 0.1$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

A 24: Linear probability model; dependent variable: male contraception; independent variable: division of housework; pairfam wave 1, own calculations

	AMC17	AMC18	AMC19	AMC20	AMC21	AMC22
Non-traditional	-0.0265	-0.0243	0.00369	0.00613	0.0399*	0.0257
	(0.0165)	(0.0167)	(0.0170)	(0.0170)	(0.0174)	(0.0245)
Female		0.0176	0.0235	0.0225	0.00709	-0.00221
		(0.0163)	(0.0161)	(0.0161)	(0.0161)	(0.0204)
1971-1973			0.126***	0.128***	0.0512**	0.0513**
			(0.0158)	(0.0158)	(0.0183)	(0.0183)
East				-0.0730***	-0.0739***	-0.0743***
				(0.0182)	(0.0182)	(0.0182)
One Child					0.102***	0.102***
					(0.0210)	(0.0210)
Two Children+					0.177***	0.177***
					(0.0217)	(0.0217)
Non-traditional # Female						0.0257
						(0.0325)
Intercept	0.216***	0.205***	0.116***	0.129***	0.0755***	0.0815***
	(0.0100)	(0.0143)	(0.0169)	(0.0173)	(0.0177)	(0.0196)
Observations	2571	2571	2571	2571	2571	2571

Standard errors in parentheses + $p < 0.1$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Absolute Resources

A 25: Linear probability model; dependent variable: modern methods; independent variable: absolute education; pairfam wave 1, own calculations

	AMM23	AMM24	AMM25	AMM26	AMM27	AMM28	AMM29
low education	-0.214***	-0.213***	-0.217***	-0.214***	-0.210***	-0.201***	-0.179***
	(0.0283)	(0.0283)	(0.0282)	(0.0282)	(0.0283)	(0.0286)	(0.0465)
middle education	-0.0175	-0.0170	-0.0153	-0.0161	-0.0142	-0.0105	-0.0156
	(0.0123)	(0.0123)	(0.0122)	(0.0122)	(0.0122)	(0.0123)	(0.0178)
Female		-0.00964	-0.00711	-0.00691	-0.00426	-0.000407	-0.00311
		(0.0120)	(0.0119)	(0.0119)	(0.0119)	(0.0121)	(0.0187)
1971-1973			-0.0953***	-0.0957***	-0.0848***	-0.0721***	-0.0723***
			(0.0117)	(0.0117)	(0.0124)	(0.0151)	(0.0151)
East				0.0296*	0.0300*	0.0350*	0.0351*
				(0.0145)	(0.0146)	(0.0146)	(0.0146)
Cohabitation					-0.0397**	-0.0179	-0.0179
					(0.0138)	(0.0146)	(0.0146)
One Child						-0.0684***	-0.0688***
						(0.0186)	(0.0187)
Two Children+						-0.0327+	-0.0330+
						(0.0185)	(0.0185)
low education # Female							-0.0332
							(0.0585)
middle education # Female							0.00917
							(0.0244)
Intercept	0.848***	0.853***	0.903***	0.897***	0.920***	0.915***	0.917***
	(0.00956)	(0.0114)	(0.0116)	(0.0118)	(0.0135)	(0.0137)	(0.0155)
Observations	4060	4060	4060	4060	4060	4060	4060

Standard errors in parentheses $^{+}$ $p < 0.1$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

A 26: Linear probability model; dependent variable: male contraception; independent variable: absolute education; pairfam wave 1, own calculations

	AMC23	AMC24	AMC25	AMC26	AMC27	AMC28	AMC29
low education	-0.0328	-0.0356	-0.0329	-0.0378	-0.0412	-0.0715*	-0.0324
	(0.0302)	(0.0303)	(0.0305)	(0.0306)	(0.0305)	(0.0306)	(0.0500)
middle education	-0.0661***	-0.0674***	-0.0724***	-0.0708***	-0.0722***	-0.0796***	-0.0653**
	(0.0148)	(0.0148)	(0.0146)	(0.0146)	(0.0146)	(0.0145)	(0.0206)
Female		0.0238+	0.0196	0.0193	0.0172	0.00442	0.0236
		(0.0136)	(0.0134)	(0.0134)	(0.0134)	(0.0135)	(0.0236)
1971-1973			0.130***	0.132***	0.123***	0.0585***	0.0583***
			(0.0133)	(0.0133)	(0.0140)	(0.0163)	(0.0163)
East				-0.0567***	-0.0573***	-0.0576***	-0.0578***
				(0.0160)	(0.0160)	(0.0160)	(0.0160)
Cohabitation					0.0291+	-0.0240	-0.0246
					(0.0154)	(0.0158)	(0.0158)
One Child						0.0960***	0.0969***
						(0.0198)	(0.0198)
Two Children+						0.158***	0.159***
						(0.0201)	(0.0201)
low education # Female							-0.0651
							(0.0628)
middle education # Female							-0.0268
							(0.0288)
Intercept	0.230***	0.218***	0.156***	0.166***	0.150***	0.168***	0.158***
	(0.0122)	(0.0139)	(0.0141)	(0.0143)	(0.0165)	(0.0166)	(0.0192)
Observations	3333	3333	3333	3333	3333	3333	3333

Standard errors in parentheses + $p < 0.1$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Relative Resources

A 27: Linear probability model; dependent variable: modern methods; independent variable: 'relative' labour force status; pairfam wave 1, own calculations

	AMM30	AMM31	AMM32	AMM33	AMM34
male breadwinner	-0.0746***	-0.0631***	-0.0590***	-0.0562***	-0.0420*
	(0.0144)	(0.0148)	(0.0149)	(0.0150)	(0.0164)
female breadwinner	-0.0175	-0.0264	-0.0258	-0.0271	-0.0260
	(0.0255)	(0.0255)	(0.0255)	(0.0255)	(0.0256)
1971-1973		-0.0553***	-0.0566***	-0.0507***	-0.0432*
		(0.0143)	(0.0143)	(0.0148)	(0.0171)
East			0.0420*	0.0419*	0.0488**
			(0.0167)	(0.0167)	(0.0168)
Cohabitation				-0.0283	-0.00784
				(0.0177)	(0.0190)
One Child					-0.0688**
					(0.0220)
Two Children +					-0.0290
					(0.0222)
Intercept	0.833***	0.860***	0.850***	0.869***	0.864***
	(0.0107)	(0.0121)	(0.0127)	(0.0167)	(0.0171)
Observations	3450	3450	3450	3450	3450

Standard errors in parentheses + $p < 0.1$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

A 28: Linear probability model; dependent variable: male contraception; independent variable: 'relative' labour force status; pairfam wave 1, own calculations

	AMC30	AMC31	AMC32	AMC33	AMC34
male breadwinner	0.0655***	0.0447**	0.0379*	0.0382*	-0.0111
	(0.0169)	(0.0172)	(0.0172)	(0.0172)	(0.0186)
female breadwinner	-0.000776	0.0137	0.0126	0.0124	0.00438
	(0.0290)	(0.0289)	(0.0288)	(0.0289)	(0.0284)
1971-1973		0.0951***	0.0983***	0.0989***	0.0416*
		(0.0164)	(0.0164)	(0.0170)	(0.0191)
East			-0.0724***	-0.0724***	-0.0766***
			(0.0188)	(0.0188)	(0.0188)
Cohabitation				-0.00301	-0.0589**
				(0.0206)	(0.0216)
One Child					0.102***
					(0.0242)
Two Children +					0.166***
					(0.0245)
Intercept	0.196***	0.153***	0.169***	0.171***	0.197***
	(0.0125)	(0.0142)	(0.0148)	(0.0204)	(0.0209)
Observations	2723	2723	2723	2723	2723

Standard errors in parentheses $^{+}$ $p < 0.1$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Gender ideology theory

A 29: Linear probability model; dependent variable: modern methods; independent variable: gender ideology; pairfam wave 1, own calculations

	AMM35	AMM36	AMM37	AMM38	AMM39	AMM40	AMM41
Gender Ideology	0.0152*	0.0155*	0.0154*	0.0141+	0.0141+	0.0127+	0.0112
	(0.00741)	(0.00745)	(0.00743)	(0.00743)	(0.00742)	(0.00744)	(0.0111)
Female		-0.00605	-0.00486	-0.00405	-0.00182	0.00356	-0.00749
		(0.0142)	(0.0141)	(0.0141)	(0.0141)	(0.0143)	(0.0661)
1971-1973			-0.0681***	-0.0685***	-0.0598***	-0.0429*	-0.0428*
			(0.0138)	(0.0138)	(0.0144)	(0.0171)	(0.0171)
East				0.0477**	0.0471**	0.0526**	0.0526**
				(0.0167)	(0.0167)	(0.0167)	(0.0167)
Cohabitation					-0.0371*	-0.00614	-0.00616
					(0.0177)	(0.0191)	(0.0191)
One Child						-0.0850***	-0.0849***
						(0.0211)	(0.0211)
Two Children+						-0.0470*	-0.0468*
						(0.0206)	(0.0207)
Female # Gender Ideology							0.00258
							(0.0149)
Intercept	0.724***	0.726***	0.766***	0.762***	0.787***	0.789***	0.795***
	(0.0329)	(0.0333)	(0.0339)	(0.0339)	(0.0355)	(0.0355)	(0.0496)
Observations	3450	3450	3450	3450	3450	3450	3450

Standard errors in parentheses $^{+}$ $p < 0.1$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

A 30: Linear probability model; dependent variable: male contraception; independent variable: gender ideology; pairfam wave 1, own calculations

	AMC35	AMC36	AMC37	AMC38	AMC39	AMC40	AMC41
Gender Ideology	0.0218**	0.0218**	0.0219**	0.0240**	0.0240**	0.0292***	0.0147
	(0.00839)	(0.00842)	(0.00838)	(0.00834)	(0.00834)	(0.00832)	(0.0126)
Female		-0.000311	-0.00319	-0.00456	-0.00477	-0.0200	-0.133+
		(0.0164)	(0.0163)	(0.0163)	(0.0163)	(0.0163)	(0.0725)
1971-1973			0.105***	0.107***	0.106***	0.0380*	0.0384*
			(0.0158)	(0.0158)	(0.0165)	(0.0191)	(0.0191)
East				-0.0807***	-0.0807***	-0.0796***	-0.0797***
				(0.0186)	(0.0186)	(0.0186)	(0.0186)
Cohabitation					0.00325	-0.0604**	-0.0610**
					(0.0205)	(0.0215)	(0.0214)
One Child						0.103***	0.104***
						(0.0232)	(0.0231)
Two Children+						0.169***	0.171***
						(0.0229)	(0.0228)
Female # Gender Ideology							0.0263
							(0.0167)
Intercept	0.138***	0.138***	0.0797*	0.0865*	0.0844*	0.0793*	0.140*
	(0.0366)	(0.0372)	(0.0377)	(0.0376)	(0.0403)	(0.0401)	(0.0561)
Observations	2723	2723	2723	2723	2723	2723	2723

Standard errors in parentheses $^{+}$ $p < 0.1$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$