COOPERATIVE GENDER BELIEFS AND COST-BENEFIT TRADE-OFFS OF GENDER INEQUALITY

BY

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Abstract

Cooperative gender beliefs are characterizations of women, men and heterosexual relationships that focus on positive aspects of traditional traits and roles, and heterosexual interdependency, but ultimately rationalize gender inequality. Approaches to cooperative gender beliefs vary by discipline, resulting in different theories and terminology. Terms such as benevolent sexism, gender-specific-meritocracy, and traditional gender beliefs refer to similar clusters of beliefs that are associated with gender inequalities. By specifying the different types, functions, and levels of cooperative gender beliefs, this thesis provides a systematic study that investigates why people would adopt beliefs that perpetuate harmful gender inequalities. This line of study tests evidence for the perspective that cooperative gender beliefs manage trade-offs between the costs and the benefits of living in societies with unequal gender relations. I conceptualize different types of gender beliefs as *cooperative,* and investigate the extent to which they are linked with trade-offs involved in inequality at the individual level, such as doing unfair amounts of housework, and the societal level, such as being relatively less impacted by gender inequalities. I present three empirical studies. Study 1 explores different types of cooperative gender beliefs and how they are linked to gendered divisions of labour. Study 2 investigates evidence for an evolutionarily informed theory that cooperative gender beliefs function to increase reproductive benefits by assessing residual change in individuals' fertility rate over two years; and a socio-structural theory that cooperative gender beliefs arise to justify the inequalities encompassed in heterosexual parenthood. Finally, Study 3 distinguishes cooperative gender beliefs endorsed by individuals vs. cooperative gender beliefs endorsed by societies more broadly to understand how these beliefs palliate feelings of injustice, thereby alleviating the negative effects of inequalities on individuals' subjective wellbeing. Together these studies advance our understanding of how cooperative gender beliefs justify gender inequalities and thus function to offset some of the harm that inequality causes women.

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Κάνε το καλό και ρίξτο στο γιαλό

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I. INTRODUCTION

Amongst the many group-based inequalities across the world, gender inequality stands out. *Gender inequality* is defined broadly as asymmetrical power and status relations shaped by societal constraints that group two majority gender identities under the labels of "women" and "men" which then influence several, if not all, aspects of people's lives (Fiske & Bai, 2019; Lorber, 1994; Ridgeway & Correll, 2004; Risman, 2004). Gender inequality represents objective disadvantages experienced by approximately half of the human population—3,865,655,950 people as of September, 2019 (Worldometers, n.d.). The universality of gender inequality is so powerful that it has been argued to predate the emergence of our species (i.e., sexual hierarchy; Houde, 2001; Smuts, 1995), argued to have evolutionary functions and serve relative benefits such as reproductive success (Ickes, 1993; Johannesen–Schmidt & Eagly, 2002; Zentner & Eagly, 2015), and has persisted despite concerted country and cross-country efforts to reduce inequalities by changing laws and economic structures (Estes, 2011; Ridgeway & Correll, 2004; Seguino, 2016; World Economic Forum, 2018). Gender inequality is a complex problem that emerges at the individual level—such as asymmetries in personal goals and needs, interpersonal power, relationship-related roles and beliefs—and processes at the societal level—such as asymmetries in the experiences of sexist and heteronormative discrimination, economic opportunities, and restrictiveness of social norms (Blumberg, 1984; Jackman, 1994; Overall & Hammond, 2018; Ridgeway & Correll, 2004).

This thesis focuses on one fundamental area of intersection between gender inequality at the individual level and gender inequality at the societal level: sexist and stereotypical gender beliefs (e.g., Connor, Glick, & Fiske, 2016; Eagly & Steffen, 1984; Jackman, 1994; Overall & Hammond, 2018). Gender beliefs are among the core components that maintain societal inequalities because they underpin different societal roles prescribed for women and men, and the status and prestige afforded to those roles (Bourdieu, 2001; Eagly & Steffen, 1984). Gender beliefs and roles, however, do not solely exist as societal constructs. People also individually endorse beliefs and adopt roles that emphasize the cooperative nature of gender relations, and rationalize their experiences of living in a context in which there is pervasive gender inequality (Glick & Fiske, 1996; Jackman, 1994). In short, one major determinant of gender inequalities in society are the roles, beliefs, and rationalisations that individuals hold.

It is clear that gender inequalities are legitimized and institutionalized by gender beliefs and gendered roles, but it is much more difficult to explain why people would adopt prejudiced beliefs as well as accept, or even support, unequal societal systems. Accounting for this apparent paradox of people's endorsement of beliefs and adoption of roles that promote inequalities requires understanding the historical legacy of gender beliefs. Gender beliefs and sex-typed roles stem from interplays between our evolutionary and social-cultural heritage with a great environmental influence (Buss & Schmitt, 2011, 2018; Sidanius, Cling, & Pratto, 1991; Wood & Eagly, 2002; Zhu & Chang, 2019). As many cultural-evolutionarily evolved adaptations, gendered roles have provided solutions for adaptive problems involving survival and reproduction (Buss & Schmitt, 1993; Johannesen–Schmidt & Eagly, 2002; Trivers, 1972). For example, parental investment in offspring is not equally costly for males and females (Trivers, 1972). Women, as compared to men, devote more energy and time to caring for children and rely on men's protection, while men's primary responsibility is confined to gaining economic resources while relying on women's childcaring efforts (e.g., Huber, 2016; Smuts, 1995). Under such circumstances, women and men can benefit from adopting (and seeking partners who adopt) beliefs and roles that correspond to gender segregated divisions of labour (Gul & Kupfer, 2018; Johannesen–Schmidt & Eagly, 2002; Zentner & Eagly, 2015).

Consequently, the paradox of gender inequality is theorized to involve people managing trade-offs[1] in an unequal societal structure while interdependently relying on one another: accepting the costs of an unequal system (e.g., limited opportunities) in order to obtain some personal benefit (e.g., provision for offspring; Ickes, 1993; Zentner & Eagly, 2015). Thus, cooperation between women and men, even if unbalanced, may still lead to benefits that mitigate, or perhaps outweigh, the costs of participating in unequal social systems.

The primary aim of this thesis is to investigate the beliefs, that I call *cooperative gender beliefs*, that underpin imbalanced cooperation between women and men. Cooperative gender beliefs describe women and men as an interdependent unit with complementary traits, roles and divided responsibilities working towards some sort of mutual benefit. For example,

[1] In the present thesis, the discussion of cost and benefit trade-offs involves evaluating factors from a perspective that recognizes the importance of freedom of choice and access to opportunities. The value statements in the present thesis, therefore, acknowledge gender inequalities and their harmful effects on individuals' lives. The language used to describe trade-offs in the present thesis is reflective of liberal values and has been influenced by scientists of the field of inequality and justification such as Jackman (1994), Eagly and Steffen (1984), Wood and Eagly (2002, 2012), Ridgeway and Correll (2004), and Glick and Fiske (1996).

beliefs that hold “men and women complete each other”, “a man’s job is to earn money while a woman’s job is to look after the home and family”. Cooperative beliefs could technically refer to an egalitarian conceptualization of sharing power in which women and men cooperate under conditions of equity in a non-gendered way (See Fiske & Bai, 2019). However, here I use this term to emphasize the gendered and unbalanced nature of heterosexual cooperation.

Cooperative gender beliefs is a useful concept because (a) it comprehends different forms and types of beliefs; (b) and by building on core aspects of imbalanced gender relations (i.e., status and power differences); (c) it stands in the intersection of vertical and horizontal inequalities (e.g., promoting gendered divisions of labour and thereby bolstering societal inequalities). At the core of my thesis is the claim that cooperative gender beliefs justify gender inequalities and thus function to offset some of the harm that inequality causes women. This thesis tests theoretical claims that cooperative gender beliefs involve a combination of costs and benefits: Cooperative gender beliefs limit women’s socioeconomic freedoms (e.g., disproportionate unpaid labour), cooperative gender beliefs are linked to high-fertility mating strategies (i.e., a reproductive benefit), and cooperative gender beliefs mitigate the negative effects of inequalities on people’s subjective wellbeing (i.e., a benefit for psychological wellbeing).

In this chapter, I outline how gender inequalities remain a global problem highlighting the critical need to understand cooperative gender beliefs when examining gender inequalities. I summarize evolutionary and social-constructionist theories on gender inequality to set the conceptual framework for advancing our understanding of beliefs that emphasize the cooperative nature of gender relations. I next discuss gender cooperation and cooperative gender beliefs. Finally, I summarize the contribution of the present thesis and introduce three empirical studies that investigate the types of cooperative gender beliefs, their function, and their interplay between the individual level and the societal level.

Gender Inequalities

Despite gender gaps gradually closing across the world, inequalities between women and men remain a complex and systematic problem (Seguino, Sumner, van der Hoeven, Sen, & Ahmed, 2013; United Nations Development Programme, 2017; World Economic Forum, 2018). Societal inequalities and the seemingly voluntary individual choices are reciprocally entwined and have been described as a demand-supply aspect of the gender system (Ridgeway & Correll, 2004). First, traditional gender relations at the societal level are

unequal. For example, across the world men have greater access to education and health care, as well as men's economic participation and opportunity is associated with greater political power (United Nations Development Programme, 2017; World Economic Forum, 2018). Second, traditional gender relations are also unequal at the individual level. For example, despite the cross-national continuing trend towards equality in the household (Altintas & Sullivan, 2016), women's unpaid work (i.e., housework and childcare) largely exceeds that of men, while men continue to be the primary provider for the family (Treas & Drobnič, 2010). Crucially, in the complexity of systematic gender inequalities societal and individual level gender relations intertwiningly perpetuate the status quo. For example, worldwide gender gaps in division of labour restrain women's socioeconomic and political power (Fuwa, 2004; Treas & Tai, 2016); gendered work-family policies also promote gendered division of labour upon parenthood (Adema, Clarke, & Frey, 2015; Estes, 2011); parenthood inequalities hinder women's career advancement and financial prospects (Cech & Blair-Loy, 2019; Grimshaw & Rubery, 2015), resulting in financial disadvantages close to retirement even in relatively egalitarian contexts such as Australasia (ANZ, 2015). Thus, sociological research describes systematic gender inequalities that exist across the globe and pervade individuals' and societies' lives.

Theories on Gender Relations

The cultural universality of gender inequalities has inspired several explanations that attempt to explain why unequal gender relations exist. These explanations range from anthropological accounts on the symbolic parallel between female as nature vs. male as culture asymmetry (Ortner, 1972), to the overarching modernization account on the development of civilizations (Inglehart & Norris, 2003). While these theoretical accounts on gender inequalities highlight specific elements of the driving forces of gender inequalities, they fall under the umbrella of two comprehensive theories aiming to provide ultimate explanations for gender relations. Evolutionary psychological accounts (Buss & Schmitt, 2011, 2018) and (bio)social psychological accounts (Koenig & Eagly, 2019; Wood & Eagly, 2002) together provide a conceptual framework for how gender relations shape inequalities.

Evolutionary perspectives hold that gender relations are primarily influenced by sex differences in human traits and behaviours that are attributable to selective pressures and adaptive challenges (Buss, 1995; Schmitt, 2015). Women and men face differential selective pressures due to sex-typed reproductive and parental investment strategies. For example, reducing paternity uncertainty for males and increasing paternal investment for females are

key drivers in mate selection (Buss, 1989; Buss & Barnes, 1986; Buss & Schmitt, 1993; Schmitt, 2014; Trivers, 1972). These sex-typical challenges are responsible for developing differential mate preferences, psychological dispositions and divergent gendered behaviours including sexual divisions of labour (Buss, 1995; Buss & Schmitt, 2011; Lippa, 2010; Schmitt, Realo, Voracek, & Allik, 2008). These naturally evolved sex differences further create conflicting interests between the sexes, while sexual interdependency requires cooperation between women and men to enhance survival (Buss, 2017). In this constant balancing and counterbalancing, gender relations are seen as results of evolved sex differences that prompt women and men to cooperate with one another while constantly offsetting their costs with their benefits.

In contrast, the social-constructionist paradigm is based on a culture centred view of social realities (Barkow, Cosmides, & Tooby, 1995; Berger & Luckmann, 1966). The social role model (Eagly, 1987; Eagly & Steffen, 1984), and the stereotype content model (Cuddy, Fiske, & Glick, 2008; Fiske, Cuddy, Glick, & Xu, 2002) both posit that gender relations are shaped by shared knowledge (i.e., beliefs) about the roles and characteristics that are typical of (members of) the gender groups. Wood's and Eagly's (2002; 2012) advancement on social role theory resulted in a biopsychosocial model positing that gender relations, though, are somewhat constrained by biological factors, they are strongly defined by cultural elements. For example, sex-specific biological constraints foster gendered divisions of labour and hence the development of different skills and characteristics. Gendered characteristics then impart specific attributes to the female and male stereotypes and rationalize existing social roles (Hoffman & Hurst, 1990; Koenig & Eagly, 2014, 2019). Through socialization women and men internalize sex-typed expectations which shape their identity development, respective behaviour and later life choices (e.g., agentic vs. communal traits and roles; Eagly, 1987; Eagly & Steffen, 1984; Wood & Eagly, 2012). Indeed, stereotypic beliefs are associated with traditional marital role expectations from potential partners (i.e., homemaker vs. provider; Eastwick et al., 2006), and sexist attitudes within intimate relationships foster gendered family vs. career orientations (Cheng, Shen, & Kim, 2019; Lee, Fiske, Glick, & Chen, 2010; Overall & Hammond, 2018). Gender relations thus constitute a social cultural system in which gender role conforming behaviour pays off if everyone collaborates according to their role.

Both evolutionary and social-constructionist theories recognize heterosexual interdependency as a key factor of gender relations that drives cooperation. Together these two theoretical perspectives, thus, provide a comprehensive framework of understanding the

importance of interdependency in creating inequalities. For example, both perspectives acknowledge that sex differences in mating preferences are reflective of the interdependence inherent in heterosexual relationships, however, they differ in their focus on what causes gender-typed mate preferences. Evolutionary accounts regard mating preferences as resulting from sexual selection and parental investment (Buss, 1989; Buss & Schmitt, 1993), while social-constructionist accounts relate mating preferences to societal gender inequalities as resulting from (and leading to) socially constructed gender systems (Wood & Eagly, 2002; Wood & Eagly, 2012). Despite these differences, both perspectives hold that women and men form a cooperative unit with different characteristics, roles and divided work duties. Integrating these two perspectives highlights that there are multiple interplays between biological, ecological and social environments, and that economic and cultural contexts all systematically shape gender relations (Zhu & Chang, 2019).

Theorizing Gender Relations as Cooperative

Gender relations that produce structured gender inequalities are maintained by individual interactions between women and men as dependent intimate partners (Jackman, 1994; Overall & Hammond, 2018; Ridgeway & Correll, 2004). Interpersonal relationships may result in outcomes that are mutually rewarding, mutually damaging, unilaterally rewarding or unilaterally damaging. (Deutsch, 1949). Interpersonal relationships are cooperative if they reflect a collective action which stems from common interest, defined by direct and indirect reciprocity, and result in some mutual benefit (Lindenfors, 2017). Thus, individuals might be expected to cooperate if cooperation pays off for them. Lindenfors (2017) defines cooperation as egalitarian if the cooperating parties are not alike and hence there is a mutual interdependency underlying their motivation. Interdependency refers to relationships in which the outcome of the interaction between men and women is determined by their partner's abilities, needs, and goals (Kelley & Thibaut, 1978). Given the interdependency of the sexes, cooperation would ideally lead to mutual benefits, but dependency can also be exploited (Fiske & Bai, 2019; Glick & Fiske, 1996; Jackman, 1994).

For example, in interpersonal interactions, women and men use dominance in different ways to increase communal or individual gains performed through kindness or coercion (Buss, 1981). Two studies conducted by Buss (1981) indicated that women and men alike valued and performed group-oriented dominant acts that had mutual benefits (e.g., taking the lead in a group to accomplish a task), but women judged group-oriented communal acts more desirable than men. Men rather valued self-enhancing agentic acts which were

unilaterally beneficial. Accordingly, for men expressing dominance included self-assertive, narcissistic and manipulative behaviour (e.g., persuading, controlling, demanding). For women, the self-serving dimension of dominance was less present in their behaviour, as they rather expressed dominance through more selfless acts that had mutual benefits rather than unilateral benefits (e.g., settling disputes and introducing speakers at meeting; Buss, 1981).

Thus, while people may be motivated to seek cooperation in interpersonal interactions, they can also take advantage of asymmetrical power relations and use it to their own advantage. Given that individuals are nested in groups which have different status, however, the outcomes of prioritizing self-interest over group-interest differ across groups (Jackman, 1994; Sidanius & Pratto, 2001). That is, the advantaged group can benefit more from the collective action of all individuals than the disadvantaged group when members of the disadvantaged group pursued self-enhancing or self-protective goals at the expense of their group interest (Sidanius & Pratto, 2001). Accordingly, interpersonal interactions can maintain imbalanced relations between cooperative groups when individuals accept costs for their group for a personal benefit. For example, gender pay gaps may encourage couples to follow a traditional family model (i.e., female caregiver vs. male breadwinner)—thereby relatively benefiting woman and man individually—women's, but not men's, individual gain comes with costs for her group (i.e., shaping stereotype content and fostering an unequal social structure; Blumberg, 1984; Koenig & Eagly, 2019).

Cooperative Gender Beliefs

Current theorising on why women and men would consensually and willingly take part in an unequal system states that people are persuaded by beliefs about gender (Jackman, 1994; Sidanius & Pratto, 2001; Smuts, 1995). Gender beliefs transform group-based exploitation at the societal level into a *subjectively* beneficial relationship between women and men at the level of heterosexual relationships (Glick & Fiske, 1996; Jackman, 1994; Sidanius & Pratto, 2001). Spreading justifying ideas can happen through many different channels of institutional control—such as religious discourse, education, and media—with key common features that make ideological persuasion a subtle but effective form of maintaining inequality (Bourdieu, 2001; Jackman, 1994; Ridgeway & Correll, 2004; Sidanius & Pratto, 2001).

The main determinant of justifying beliefs is that they are reflective of the dominant groups' interest but they are persuasive for members of the disadvantaged because they emphasize differences in skills and characteristics (Bourdieu, 2001; Glick & Fiske, 1996;

Jackman, 1994; Jost, 1995). Justifying beliefs may be based on realistic observations (i.e., differences in characteristics), but they extend beyond fair utility (Jost, 1995). The particular strength of legitimizing gender beliefs stems from focusing on the biological aspects of heterosexual relations (Becker, 1981; Bourdieu, 2001; Eagly, Wood, & Diekman, 2000; Glick & Fiske, 1996; Smuts, 1995). For example, beliefs about women being good nurturers may reflect realities, yet, cooperative gender beliefs foster inequalities by generalizing these beliefs to the extent that they result in costly outcomes (e.g., because women are good caregivers they should also take care of family members at the expense of their career; Eagly, 1987; Eagly & Steffen, 1984). Thus, one key link that associate biological factors with cultural factors and connects individual-level inequalities to the societal-level inequalities is what people believe about the skills and characteristics of women and men.

Endorsing cooperative gender beliefs are, therefore, reflective of a process in which people do not merely comply with principles that serve the dominant group's interest but are actually *motivated* to provide ideological support for the unequal status quo (Jost, 1995; Jost & Banaji, 1994; Jost, Banaji, & Nosek, 2004). That is, cooperative gender beliefs are internalized by both advantaged and disadvantaged groups (Sidanius & Pratto, 2001): men justify their own position, while women—though generally to a lesser extent—also adopt beliefs that justify the gender structure of the world (Glick et al., 2000; Seguino, 2007). Their mutual engagement is reinforced by the content of beliefs (Fiske et al., 2002; Jackman, 1994; Koenig & Eagly, 2014). Next, I discuss how the ambivalence and complementarity of stereotype content together with heterosexual interdependency can explain why someone would engage in such an unequal cooperation in which the objective costs are only offset by subjective benefits.

Ambivalent and complementary stereotypes that accentuate interdependence and hence the need for cooperation maintain power differentials in several ways. Gender stereotypes are beliefs about the physical, emotional and behavioural characteristics of women and men (Diekman, Goodfriend, & Goodwin, 2004; Eagly & Steffen, 1984; Goodwin & Fiske, 2001). For example, men are stereotyped as being agentic, competent, strong, but not as warm as women. Women are stereotyped as being communal, warm, caring, but not as competent as men (Eagly & Steffen, 1984; Fiske et al., 2002; Glick & Fiske, 1996; Glick & Fiske, 1999). The complementarity and ambivalence of stereotype content are key features of cooperative gender beliefs because together they create the illusion of equality and justness—also known as the Panglossian ideology (Kay et al., 2007)—and thereby they foster cooperation (Fiske et al., 2002; Glick & Fiske, 1996).

Complementing negative stereotypes of the disadvantaged with positive ones, and complementing the positive stereotypes of the advantaged with negative ones, create a sense of justice in injustice. The "rich but dishonest", or the "wonderful but weak" stereotype contents describe a social world in which nothing is 'all bad *or* good' but a mixture of balanced qualities where 'no one has it all' (Fiske et al., 2002; Jost & Kay, 2005; Kay & Jost, 2003; Kay et al., 2007). Although, there is no monopoly over valued attributes, there are asymmetries in the ways valued qualities are attributed to people (Kay, Jost, & Young, 2005). Derogating the disadvantaged (and complimenting the advantaged) on characteristics that are *causally related* to their social outcomes, while simultaneously compensating the disadvantaged (and downgrading the advantaged) on characteristics that are *causally irrelevant* to their social outcomes are impressively effective strategies to promote a sense of justness (Kay et al., 2005). For example, the 'competent thus successful, but less warm' male stereotype content explains men's dominant position while counterbalancing it with some negative stereotype which is irrelevant to their success. The 'incompetent thus less successful, but warm' stereotype content justifies women's subordinate status while compensates for it with some positive stereotype which is irrelevant to their lack of success.

Stereotypes might appear irrelevant but they are not arbitrarily assigned and counterbalanced across genders (Cuddy et al., 2008; Fiske et al., 2002). Another important aspect of cooperative gender beliefs is that they focus on attributes that are necessary to fulfil cooperative roles (Koenig & Eagly, 2014). For example, competence and warmth make men and women good leaders and good caregivers (Diekman et al., 2004; Eagly & Steffen, 1984). Stereotype content research (e.g., Fiske et al., 2002; Kay et al., 2007; Kay et al., 2005) suggests that, for the advantaged, the positive stereotype content is not arbitrary but supportive and defining of their high status (e.g., competent leader), while the counterbalancing negative stereotype content is arbitrary in a sense that it is irrelevant to their high status but logical in the sense that it is oppositional to the quality of the disadvantaged (e.g., less warm). For the disadvantaged, the positive stereotype content is not arbitrary but supportive and defining of their low status (e.g., warm caregiver), while the negative stereotype content is arbitrary in a sense that it is irrelevant to their low status but logical in the sense that it is oppositional to the quality of the advantaged (e.g., incompetent).

So far these positive and negative contents are symmetrical across genders but then comes a twist: The fact that the negative stereotype content of the disadvantaged is irrelevant to successfully fulfilling their low status but oppositional to the quality of the advantaged makes the negative stereotype content relevant to the disadvantaged's *lack* of high status

(Kay et al., 2005). In this way, ambivalent and complementary stereotypes provide a solid basis for why women and men are well suited to their complementary roles, while they simultaneously justify an unequal gender system. Stereotyping in this way creates a world based on justness in which 'everyone gets what they deserve, and everyone deserves what they get' (Lerner, 1980).

In summary, cooperative gender beliefs portray women and men as an interdependent cooperative unit working together towards some shared goal. Cooperative refers to mutual interest and engagement, yet it does not necessarily require symmetrical contributions and balanced outcomes. Instead, the content of cooperative gender beliefs builds on ambivalent and complementary characteristics and roles that rationalize asymmetrical gender relations with disparities in outcomes. The present thesis uses the term of cooperative gender beliefs as an umbrella term to refer to gender beliefs that emphasise the complementary nature of gender relations; that are reflective of heterosexual interdependence; and justifying of status differences.

Types of Cooperative Gender Beliefs

Over human history people have held a wide collection of cooperative gender beliefs which qualifies these beliefs as cultural universals. That is, there certainly is cultural variation in the details and appearances of cooperative gender beliefs, yet they are essentially based on the same theme (Cuddy et al., 2008; Cuddy et al., 2009; Prentice & Miller, 2006). Cooperative gender beliefs describe fair relations in which women are particularly suitable for relationship oriented, caring and domestic roles; and men are particularly suitable for roles such as providers and protectors (Glick et al., 2000; Seguino, 2007; Wood & Eagly, 2002). There are several fundamental cultural factors shaping these beliefs including the religious legacy of social relations; a social reward-punishment system ensuring that relations are set and controlled; and a strong human tendency to believe that the world is fair and just.

Gender cooperation in religious beliefs. The rich cultural heritage of religious traditions is embedded in gender relations as we know them in today's 'secular' societies. (Inglehart & Norris, 2003; Sidanius & Pratto, 2001). Gender relations are promoted and legitimized through several religious channels. Values and qualities possessed by women and men are incorporated in religious teachings and scripts which establish the legitimacy of gender relations (Ellison & Bartkowski, 2002; Mikołajczak & Pietrzak, 2014). For example, the following excerpts clearly communicate power and status asymmetries between women and men fostering inequalities: 'Wives, submit yourselves unto your own husbands, as unto

the Lord. For the husband is the head of the wife, even as Christ is the head of the church . . . as the church is subject unto Christ, so let the wives be to their husbands in everything.' (Ephesians 5:22-24). In a Jew blessing, men recite daily in their morning prayers: 'Blessed are You… who did not make me a woman.' The Koran stipulates that a woman shall inherit less than a man (Quran 4:11), and that a woman's testimony counts for half a man's. (Quran 2:282). Beyond teachings, the gender order is also represented in religious organisational structures and practices that authorize men more than women to perform sacred rituals, recite sacred texts, or lead communities (Ozorak, 1996). The influence of religious culture on gender relations is so excessive that it is nearly impossible to imagine the world as we know it without the impact of religious beliefs governing societies throughout human history.

Different measures of religiosity are consistent and robust predictors of beliefs and practices that underpin gender inequalities. Although religious traditions are heterogeneous, previous research indicated that the most reliable predictor of gender inequality is levels of religiosity rather than types of religiosity (Schnabel, 2015; Seguino, 2011). Particularly, whether someone belongs to a religious group and how often they attend religious services are reliable predictors of gender inequitable attitudes across countries, while there seems to be less of a difference in gender attitudes across religious affiliations (Schnabel, 2015; Seguino, 2011). Furthermore, personal religious beliefs have more influence on supporting gender inequality in more developed nations—characterised by self-expressive values—than in less developed nations—characterised by survival values (Adamczyk, 2013). The masculine image of God (i.e., God being male) also seems to be a more important factor predicting individuals' traditional gender ideology than religious affiliation or other religious measures (e.g., biblical literalism, frequency of church attendance, prayer, and reading sacred scriptures), and socio-demographics including political orientation (Sample of 1648 US citizens; Whitehead, 2012). Put simply, there is substantial cross-cultural evidence showing the importance of religious cultures in establishing and promoting gender inequalities.

Religious cultures are particularly effective at maintaining and enforcing social norms and orders because beyond the human world there is supernatural causation and policing holding people morally accountable for maintaining and/or disrupting the social order (e.g., Bulbulia, 2004). Religious cultures promote inequalities by romanticizing the image of women and men as two halves completing each other in unity (Sidanius & Pratto, 2001). However, nothing can be so powerful as an omnipresent and omnipotent supernatural power that has laid out the rules for the human world and is eager to keep that order. Gender beliefs are not only cooperation enhancement ideologies but also descriptions of the God given roles

of men and women in Abrahamic religions; or reflections of qualities and forces through which interplay generates and carries forward the world in Chinese philosophies. These ideas place a heavy weight on people implying that violating gender norms is not only a socially deviant behaviour but something so profound that may result in catastrophic consequences. Thus, gender relations have a strong supernatural legacy in religious traditions that have dominated the discourse to govern social relations over thousands of years of human history.

Gender cooperation in sexist beliefs. Ambivalent sexism theory states that ambivalent attitudes towards women (Glick & Fiske, 1996) and towards men (Glick & Fiske, 1999) are based on the intimate nature of relationship between women and men, and function to justify, facilitate, and thereby maintain the status quo and power differentials between the sexes (Brandt, 2011; Glick et al., 2000; Glick et al., 2004). Ambivalent sexism theory describes sexist attitudes that comprise two sets of ideologies (Glick & Fiske, 1996). Hostile sexism expresses negative and antagonistic attitudes towards women who challenge male power, while benevolent sexism expresses patronizing attitudes towards women who hold traditional gender roles. For example, benevolently sexist beliefs characterise women as being warm, fragile and needing of men's protection. These subjectively positive beliefs also romanticize traditional relationship roles in which women are warm caregivers with domestic responsibilities, while men are the primary providers (Chen, Fiske, & Lee, 2009; Lee et al., 2010). Thus, both forms of sexism contribute to power asymmetries at the individual level, and they both correlate with gender inequalities at the societal level (Glick & Fiske, 2001; Glick et al., 2000; Hammond & Overall, 2017; Overall & Hammond, 2018).

Ambivalent sexism provides a comprehensive framework to explain how the benefits of benevolent sexism counterbalance the costs of hostile sexism (Glick & Fiske, 1996; Jackman, 1994). The dynamics of benevolent sexism and hostile sexism are theorized to be a reward-punishment system that fosters women's cooperation in an exploitative system. That is, hostile sexism attributes negative interpersonal traits to women who refuse to fit into the traditional female stereotype (e.g., career women are aggressive, selfish, and cold), while benevolent sexism attributes positive traits to traditional women (e.g., homemakers are warm, caring and loving; Glick, Diebold, Bailey-Werner, & Zhu, 1997). Thus, benevolent sexism rewards women by offering affection, praise, and protection for conforming to conventional relationship roles and patriarchal norms (Hammond & Overall, 2017; Overall & Hammond, 2018). This forms a system in which women increase their cooperative tendency in response to punishment (e.g., workplace discrimination may dissuade women to pursue family goals

instead of career goals), and are rewarded for cooperation that fosters their investment in the system (Connor et al., 2016; Jackman, 1994).

Gender cooperation in gender-specific meritocracy. Another form of cooperative gender beliefs is *meritocratic* beliefs involving the assumption that individuals' rank in the social order is reflective of their intrinsic worth. Meritocratic beliefs locate the responsibility for unequal gender relations within the skills, abilities, and efforts of individuals suggesting that people's rank in the social order is based on merit, and hence, relations are fair (Jost, 1995; McCoy & Major, 2007). For example, high gender-specific meritocracy would be assessed by someone's strong agreement with the statement that "In general, relations between men and women are fair" and "Society is set up that men and women usually get what they deserve" (Jost & Kay, 2005). Thus, people with meritocratic beliefs justify inequalities by perceiving high status groups as more deserving than low status groups, and importantly, this deservingness means that their positions in society are *fair* and *just* (Lerner, 1980; McCoy & Major, 2007; O'Brien, Major, & Gilbert, 2012). In turn, people's perceptions of groups' relative status as fair prompt their engagement in system-maintaining behaviour, such as rejections of egalitarian alternatives to the male dominated status quo, and increased lack of interest in collective action to change gender relations (Becker & Wright, 2011; Jost et al., 2004; Jost & Hunyady, 2005). In sum, gender-specific meritocracy emphasizes cooperation between women and men in terms of the fairness of their relative status within a "fair" social order.

Holding people responsible for their outcomes based on effort and merit follows from a fallacious circular reasoning that underlies meritocratic beliefs. Stereotyping in a role-consistent way attributes (sex-typical) qualities to men and women that are necessary for their successful role performance (Eagly & Steffen, 1984). This creates a false sense that people occupy roles in society because they are naturally suited for them (Koenig & Eagly, 2014, 2019; Wood & Eagly, 2012). That is, on the one hand, sexist stereotypes stem from beliefs about women's and men's inherent characteristics and internal abilities. On the other hand, people draw inferences about their inherent attributes and abilities on the bases of external information about their roles and status in society (Jost & Banaji, 1994; Koenig & Eagly, 2019; McCoy & Major, 2007). Thus, stereotypes explain, legitimate and perpetuate status and power differences by rationalizing and justifying gender roles based on the attributes and qualities men and women possess by applying circular reasoning. For example, the gender pay gap can be justified by the following logic: men's output is greater than women's

because men's input (e.g., skill, ability, time) is greater than that of women. Because men's input is greater than women's, men deserve more output (O'Brien et al., 2012).

Costs and Benefits in the Light of Structural and Systematic Gender Inequalities

The cooperative gender beliefs I reviewed above are all based on the appreciation of the way that women and men are interdependent as individuals, compatible as distinct societal groups, and are characterized to have separate strengths and weaknesses. All three forms of cooperative gender beliefs are theorized to function to perpetuate gender inequalities, and critically, do so by conferring perceived or actual benefits to women for their acceptance and investment in the unequal system (i.e., *system justification*). Accordingly, any subjective benefits of system justification involve an inherent conflict between the objective costs of these beliefs—perpetuating inequality—and the subjective benefits of these beliefs, such as the psychological wellbeing from resolving the anxieties of living in inequality (Jost & Hunyady, 2002), or the interpersonal wellbeing of having clearly-defined and prized relationship roles (Overall & Hammond, 2018).

Indeed, the different forms of cooperative gender beliefs are consistently linked with objective costs both individually and collectively. Cooperative gender beliefs maintain inequality by promoting traditional divisions of labour (Eagly & Steffen, 1984; West & Zimmerman, 1987), fostering traditional mate preferences (Lee et al., 2010; Zentner & Eagly, 2015), and rationalizing inequalities (Jost & Kay, 2005; Kay et al., 2007). Cooperative gender beliefs are also associated with the failure to perceive injustice (Lavee & Katz, 2002), and with resistance to change the unequal status quo (Becker & Wright, 2011; Kay & Friesen, 2011). Benevolent sexism also maintains gender inequality through undermining women's competence (Hammond & Overall, 2015), aspirations (Fernández, Castro, Otero, Foltz, & Lorenzo, 2006; Rudman & Heppen, 2003), and performance (Dardenne, Dumont, & Bollier, 2007; Vescio, Gervais, Snyder, & Hoover, 2005). Religiously promoted gender beliefs also describe and enforce strict gender roles and labour divisions (Dildar, 2015; Ellison & Bartkowski, 2002; Perales & Bouma, 2019), religiosity is linked with sexist attitudes towards women (Burn & Busso, 2005; Gaunt, 2012; Glick & Lameiras, 2002; Haggard, Kaelen, Saroglou, Klein, & Rowatt, 2018; Hannover, Gubernath, Schultze, & Zander, 2018), and are linked with societal level gender inequalities across the globe (Schnabel, 2015; Seguino, 2011).

On the other hand, the different forms of cooperative gender beliefs are also consistently linked with subjective benefits at the individual level. While women who

endorse benevolent sexism, though sacrifice career success, simultaneously gain relationship security (Cross & Overall, 2018; Overall & Hammond, 2018), and experience greater life satisfaction (Hammond & Sibley, 2011). Cooperative gender beliefs alleviate emotional distress (Jost & Hunyady, 2002; Jost, Wakslak, & Tyler, 2008), may contribute to family satisfaction (Greenstein, 1996, 2009), and marital quality (Lavee & Katz, 2002). Similarly, religiously promoted values confer palliative benefits (Jost et al., 2014), positively affect marital stability (Lehrer, 2004), substantially increase happiness across cultures (Stavrova, Fetchenhauer, & Schlösser, 2013), and encourage a committed high fertility reproductive strategy (Bulbulia, Shaver, Greaves, Sosis, & Sibley, 2015; Moon, Krems, Cohen, & Kenrick, 2019; Weeden, Cohen, & Kenrick, 2008).

In sum, gender relations structure every aspect of people's life because they are embedded in heterosexual intimate relationships, families, workplaces, and societies (Lorber, 1994). When individuals engage in behaviours that favour unequal social structures, they do so for their own reasons (Ridgeway & Correll, 2004). That is, there are both costs and benefits involved that underlie persistent inequalities. Imbalanced cooperation between women and men can be promoted by different ways and one of them is establishing, enforcing and justifying norms through ideological support (Jackman, 1994). Prior research has separately identified different forms of gender beliefs and their relation to inequalities, yet, there is no systematic study that integrated them under the conception of *cooperative gender beliefs*. We do not yet know whether these different types of cooperative gender beliefs function and operate in similar ways, at different levels, and across groups. In short, there is a gap in our knowledge and a need to systematically investigate how different forms and levels of cooperative gender beliefs can function to trade off the costs and benefits of unequal gender relations.

Contribution and Thesis Overview

In this thesis I present three studies that test the theoretical claims of how cooperative gender beliefs are involved with the trade-off of the benefits and costs of gender inequality, and via this process, are also involved in recreating those inequalities (See Bourdieu, 2001; Glick & Fiske, 1996; Jackman, 1994; Jost et al., 2004; Ridgeway & Smith-Lovin, 1999; Risman, 2004; Sidanius & Pratto, 2001). My first aim is to investigate the cooperative gender beliefs held by women and men to explore the theoretical puzzle of why women, as members of a relatively disadvantaged and discriminated group, adopt beliefs, roles, and behaviours that ultimately reinforce their disadvantaged position (e.g., Bourdieu, 2001; Glick & Fiske, 1996; Just & Hunyady, 2002; Becker & Wright, 2011). My second aim is to provide solutions

to existing theoretical gaps by employing rigorous statistical testing with large-scale datasets. Many important questions involving the costs and benefits of inequalities have been unanswered because of inherent methodological difficulties. Each study of the present thesis utilizes sophisticated statistical techniques to overcome some of these difficulties (e.g., simultaneously accounting for differences in beliefs between individuals *and* across societies).

My thesis advances current psychological understanding of gender inequalities in at least two different ways. First, the interconnections between biological and cultural factors, individual-level and societal-level inequalities require the integration of different disciplines. Combining large and diverse areas of literature, which have normally been treated separately and without much reference to one another, provides a more comprehensive framework to integrate our knowledge of the complexities of gender relations. Although some of the past research focused on testing theoretical accounts against each other to reveal which theoretical approach best explains gender relations and inequalities, explaining complex social phenomena calls for multidisciplinary approaches (Barkow et al., 1995; Campbell, 2012; Lorber, 1994; Risman, 2004). Thus, this thesis aims to draw on different fields of research such as psychology, sociology, and religious studies with the main focus on psychological mechanisms that underlie social phenomena. Second, I also integrate different theoretical perspectives within discipline such as evolutionary and social-constructionist theories in examining the relative costs and benefits of gender inequalities. This integrated approach is essential for advancing our knowledge.

Another particular interest of the present thesis is expanding research on gender inequalities by acknowledging its "relational nature". Much of the past research has *exclusively* focused on women's attitudes and acceptance of inequalities, contributing to the misconception that gender inequalities are a "women's issue" and that closing gender gaps is primarily women's responsibility (See Diekman et al., 2004; England, 2010; O'Neil, 2008). The present thesis gives equal attention to both men and women by also assessing men's endorsement of cooperative gender beliefs and how those beliefs may function to perpetuate gender inequalities. This approach is pivotal in advancing our understanding of the holdbacks in the progress towards equality. Given the interdependency of the sexes, equality is just as much a mutual outcome as inequality, and thus, it requires a breadth of perspective that includes simultaneous consideration of women and men.

In sum, the literature on gender beliefs and inequalities is vast and diverse. This literature suggest that cooperative gender beliefs portray women and men as a cooperative

unit with divided work duties (Eagly & Steffen, 1984; Wood & Eagly, 2012), and that these beliefs are linked to gender inequalities across the world (Glick et al., 2000; Seguino, 2007). Prior research also suggests that cooperative gender beliefs serve different functions ranging from maintaining the status quo (Glick & Fiske, 1996; Jackman, 1994), through promoting reproductive benefits (Gul & Kupfer, 2018; Zentner & Eagly, 2015), to palliating negative effects of inequalities (Jost & Hunyady, 2002; Jost & Kay, 2005; Kay & Jost, 2003; Napier, Thorisdottir, & Jost, 2010). However, there are several issues regarding the association between beliefs and inequalities and the involved costs and benefits that remain unresolved. For example, we do not yet know whether endorsement of different types of gender beliefs relate differently to men's and women's gender-typical labour. It also remains untested whether cooperative gender beliefs do relate to reproductive benefits, and whether individual-level and/or societal-level gender beliefs are more effective at palliating the negative impacts of gender inequalities. These questions require research designed to address these issues. In the present thesis I conduct three studies to fill the gaps outlined above and address key issues presented in Table 1.1.

Table 1.1. *Thesis overview and summary of key points by thesis chapters*

Thesis Study	Key points
Study 1.	**Cooperative gender beliefs are linked to divisions of labour** • Research has demonstrated that different types of gender beliefs are linked to traditional gender roles, yet, it remains unclear whether these beliefs overlap in their content and/or function of fostering gender-typed labour. • Study 1 uniquely combines different fields of research to differentiate types of beliefs and investigates the overlap between religiosity, benevolent sexism, and gender-specific meritocracy. I present a study that assesses the link between these beliefs and men's and women's time allocation to unpaid and paid labour.
Study 2.	**Cooperative gender beliefs are linked to fertility** • Research has theorized, yet, not tested, that gender disparities in childrearing could prompt endorsing inequality-justifying gender beliefs *and/or* endorsing cooperative gender beliefs could promote traditional gender roles facilitating having more children. • Study 2 investigates the bidirectional association between individuals' fertility rate and their endorsement of benevolent sexism over a two-year period. I present a study that assesses whether cooperative gender beliefs function to enhance reproductive success and/or function to justify inequalities upon parenthood.
Study 3.	**Cooperative gender beliefs are linked to subjective wellbeing** • Research has showed that the palliative effects of justifying inequalities result in better subjective wellbeing through alleviating perceptions of injustice, yet, conflated different parts and levels of this process. • Study 3 investigates the multilevel mechanism of justification by differentiating two parts (legitimization and palliative effects), and two levels (individual and societal). I model and test whether gender beliefs mitigate individuals' perceptions of unfairness of inequalities, which, in turn, relates to people's subjective wellbeing.

Study 1: Cooperative Gender Beliefs are Linked to Divisions of Labour

The literature on the links between gender beliefs and gender roles, particularly gendered division of labour, are broad and diverse (Aassve, Fuochi, & Mencarini, 2014; Eagly & Steffen, 1984). Though—or perhaps therefore—it is unclear whether research across different fields assesses the same concept using similar but distinct measures and terminology, or they actually study different concepts. Thus, benchmarking theories of cooperative gender beliefs by testing the extent to which they uniquely predict gendered behaviour is essential for assessing whether these beliefs are actually different, or they overlap in their content and/or function of fostering gender-typed labour.

Study 1 investigates different types of cooperative gender beliefs and their relation to women's and men's time allocation to domestic and financial labour. I differentiate three types of cooperative gender beliefs by assessing the potential overlap between people's religiosity, endorsement of benevolent sexism, and endorsement of gender-specific meritocracy. I argue that these are similar but distinct measures of cooperative gender beliefs that uniquely predict gender typical time allocation to (1) domestic labour and (2) financial labour. To appropriately test my predictions, I draw from a large nationally representative sample from New Zealand (Sibley, n.d.). I employ "zero-inflated" regression analyses that account for the non-normal distribution of hours devoted to labour in which large inequalities exist, and simultaneously enter the three cooperative gender beliefs as predictors to test the extent to which they are uniquely associated with variance in each type of labour.

Study 2: Cooperative Gender Beliefs are Linked to Fertility

Research on mate preferences and gender roles has theorized two important and seemingly related functions of cooperative gender beliefs: facilitating reproductive success (Gul & Kupfer, 2018; Zentner & Eagly, 2015), and justifying inequalities upon parenthood (Jost & Kay, 2005; Kay et al., 2009). Yet, neither of these theoretical assumptions has been empirically tested and it is currently unclear whether these are mutually exclusive functions of cooperative gender beliefs. These questions have most likely remained unanswered because empirically testing theoretical assumptions regarding reproductive success have inherent methodological challenges. Since these assumptions have long dominated the field without actual empirical evidence, addressing these issues and testing different functions of cooperative gender beliefs would provide important theoretical implications to research on mate preferences and gender roles.

Study 2 provides a conservative, but initial test of different functions of cooperative gender beliefs by exploring two theoretical accounts and testing two predictions derived from theories: An evolutionarily informed account on cooperative gender beliefs proposes that, by promoting traditional mate preferences and adoption of traditional gender roles, endorsement of benevolent sexism generates the conditions for reproductive success (Glick et al., 1997; Gul & Kupfer, 2018; Jackman, 1994). In contrast, a system justification approach suggests that experiences of inequality upon parenthood motivate people to endorse beliefs that legitimize and justify inequality (Jost & Kay, 2005; Kay et al., 2009). To model the potentially bidirectional lagged effects of people's fertility rate and their endorsement of benevolent sexism across a two-year span I conduct a structural equation analysis on a large national panel sample of New Zealanders (Sibley, n.d.).

Study 3: Cooperative Gender Beliefs are Linked to Subjective Wellbeing

Research on system justification from different fields has provided some evidence that the subjective effects of gender inequalities are conditional upon gender beliefs and alleviated through people's perceptions of injustice. However, prior research has conflated different parts and levels of the justifying mechanism: it is currently unclear whether cooperative gender beliefs are effective in conferring subjective benefits because individuals endorse these beliefs and/or because are surrounded by people who hold cooperative gender beliefs. Differentiating parts and levels (i.e., individual vs. societal) of justification processes are important because it addresses issues of how cooperative gender beliefs operate in structural gender inequalities across the individual level and the societal level to confer subjective benefits.

By testing system justification theory (Jost & Banaji, 1994; Jost et al., 2004), and relative deprivation theory (Crosby, 1976; Davis, 1959), Study 3 tests the legitimizing function and the palliative effects of cooperative gender beliefs at two different levels. I test whether legitimization occurs through endorsement of personal beliefs (individual-level) and/or through embeddedness in contexts where legitimizing beliefs are high (societal-level). To test the multilevel mechanisms through which the palliative effects of justification unfold, I draw on a large cross-national sample of 36 countries across the world (ISSP Research Group, 2016) and conduct a multigroup multilevel moderated mediation model.

II. COOPERATIVE GENDER BELIEFS ARE LINKED TO DIVISIONS OF LABOUR

Psychological and sociological research on gender inequalities have both demonstrated the importance of people's endorsement of seemingly positive characterizations of women, men and traditional gender roles—that I term *cooperative gender beliefs*—in the maintenance of gender inequalities (Eagly, 2018; Fuwa, 2004; Glick & Fiske, 1996). Study 1 combines these different fields of research to investigate the overlap in the content and theoretical functions of three types of cooperative gender beliefs that have been identified in different literatures: religiosity, benevolent sexism, and gender-specific meritocratic beliefs. Prior research seems to indicate that these are *distinct* beliefs. However, these cooperative gender beliefs share very similar content so may instead be different measures of the same psychological phenomenon. In this study, I use regression models to test the degree to which each type of cooperative gender belief is uniquely related to variance in the gendered division of labour. Specifically, I regress (a) people's (unpaid) weekly hours allocated to housework, and (b) people's weekly hours allocated to paid work, on religiosity, benevolent sexism, and gender-specific meritocratic beliefs, while adjusting for important demographic variables. To handle zero-inflation in count data, I use zero-inflated models assuming negative binominal distribution in the reported hours of labour. Collectively, these measures of division of labour represent one fundamental aspect of the constellation of gender inequalities and are therefore a useful guide in differentiating the unique relationships between a variety of existing indices of cooperative gender beliefs.

The following chapter is a manuscript currently under revision for resubmission to a journal. Please do not cite without the permission from the authors.

Abstract

Gender inequality in work allocation persists even in liberal democracies, however the social-psychological underpinnings of inequality remain unclear. We used a nationally representative panel sample from a highly egalitarian country (New Zealand; $N = 9048$) to investigate how people's endorsement of three distinct belief systems that each emphasizes cooperation between men and women—religiosity, benevolent sexism, and gender-specific meritocratic beliefs—were associated with time allocation to domestic and financial labour. Results revealed that these measures were correlated but distinct, and showed weak positive associations between religiosity, benevolent sexism and domestic labour time for women, and between gender-specific meritocracy and domestic labour time for men. The gender gap in financial labour was not explained by cooperative gender beliefs. Hence, although endorsement of cooperative gender beliefs was weakly related to time allocation to domestic labour, the remarkably high gender inequality in reported work allocation remained unexplained by belief systems.

Comparing cooperative gender beliefs: Religiosity, benevolent sexism, and gender-specific meritocracy weakly predict divisions of labour

Despite advancements in egalitarian beliefs and practices across the world, gender inequality remains a global problem (United Nations Development Programme, 2017; World Economic Forum, 2018). Gender differences in the division of labour exist even in the most egalitarian countries (Fuwa, 2004). For example, according to Statistics New Zealand (2011, p. 5) women and men spend a similar amount of time on productive activities; however, 63 per cent of men's time is spent in paid work, while the majority of women's time (65%) is spent in unpaid activities (e.g., housework, childcare, and community work). Gender differences in time allocation to housework maintain inequality because housework is time-intensive, isolating, and unpaid, thus restraining women's socioeconomic opportunity and political power (e.g., Treas & Tai, 2016). Theories for the persistence of a gendered division of labour have identified three main belief systems—religious beliefs, endorsement of sexist attitudes, and endorsement of gender-specific meritocratic beliefs. These three belief systems overlap in their content, including a subjectively positive portrayal of men and women as holding cooperative roles (e.g., Glick & Fiske, 1996; Jost & Kay, 2005; Mikołajczak & Pietrzak, 2014). The functions of all three cooperative gender beliefs *also* overlap: People's religious identification, sexist attitudes, and meritocratic beliefs have separately been linked to greater adherence to traditional gender roles (e.g., Chen et al., 2009; Ellison & Bartkowski, 2002; Kay et al., 2009). Despite the theoretical and functional overlap of religiosity, sexist attitudes, and meritocratic beliefs, to our knowledge, no research has previously tested the extent to which these cooperative gender beliefs are uniquely related to the gendered division of labour at the individual level. In the current research we utilize a nationally representative, random panel sample (Sibley, n.d.) to assess the extent to which religiosity, sexist attitudes, and system-justifying beliefs simultaneously predict differences in time allocation to domestic and financial labour for men and for women in New Zealand.

Gendered Division of Labour

Previous research has found that women allocate more hours to housework and fewer hours to financial work than men, even when accounting for recent societal trends in which women devote relatively less time to housework than in the past (e.g., Bianchi, Milkie, Sayer, & Robinson, 2000; Brines, 1993; Treas, 2010). For instance, even women in full-time

employment spend more hours on unpaid labour than unemployed men (3.27 hrs/day vs. 2.67 hrs/day; Statistics New Zealand, 2011, p. 20), and across 28 European countries, having an unemployed husband translates to an extra hour of housework per week on average for women (van der Lippe, Treas, & Norbutas, 2018). Marriage is predictive of more housework for women and less housework for men (South & Spitze, 1994). Men's personal income relative to their wives is predictive of their wives' doing relatively more housework (Brines, 1993). Although new parents report an increase in their hours of housework relative to non-parents, the difference is larger for women than for men (Presser, 1994). Despite both men and women reporting that they would like more time for family, men's preference does not translate into a desire for working less (Treas & Hilgeman, 2007), whereas women are more likely to prioritize family demands, reduce their work hours, or take on family-accommodating jobs (Becker & Moen, 1999).

People's cultural beliefs are one foundation of the structural inequality between men and women (Ridgeway & Correll, 2004; Ridgeway & Smith-Lovin, 1999; Seguino, 2007). There are interrelated influences on gender roles that reinforce inequality at different levels (Fuwa, 2004; Seguino, 2007; Treas & Tai, 2016). For example, women who hold strongly egalitarian attitudes and practice work-sharing behaviour with their partner, still have their individual-level power limited by societal inequalities, such as pay disparities between men and women (Blumberg & Coleman, 1989). Treas and Tai (2016) claim that men's economic and political advantages in society are maintained through women's free labour (e.g., household work hours, raising children, emotional support). In turn, the advantages that men hold are argued to redefine cultural gender ideologies, which function to legitimize gender stratification and gender inequalities. Fuwa (2004) conducted a meta-analysis across 22 countries to investigate the links between macro-level economic and political inequality and individual-level factors (e.g.: division of housework). Results indicated that work-sharing interventions applied at the individual level are likely to be ineffective without the reduction of male economic and political power, and male dominated ideologies at the macro-level.

One key link from the individual to the macro-level gender inequality is a person's endorsement of justifying gender beliefs: Individuals respond to unequal status differences by ideologically justifying the social-relational context (Jost & Banaji, 1994), and thus interacting with one another in accordance with their justified structural roles (Calogero & Jost, 2011; Kay et al., 2009). In sum, there is a link between individuals` endorsement of cooperative gender beliefs and individuals' gendered behaviour, which are further associated with societal-level cultural beliefs and gender stratification.

Theoretical Perspectives on the Gendered Division of Labour

There are two main theoretical perspectives on the function of beliefs that arise to maintain gender differences in division of labour: First, social-constructionists accounts of "doing gender" that emphasize the consequences of division of labour (i.e., gendered behaviour). Second, evolutionary theories that focus on the origins and the functions of division of labour (e.g., Campbell, 2012; Eagly, 1987).

The gender role socialization perspective suggests that the home is a 'gender-factory' (Berk, 1985), where heterosexual interaction manufactures gender on a daily basis (West & Zimmerman, 1987). Performing gender conforming tasks profoundly reinforces gender role expectations and leads to stereotypic behaviour (Eagly, 1987). According to social role theory, although physiological differences are influential, it is the observed sex-typed behaviours that drive cultural beliefs. In turn, these beliefs then perpetuate the gender system by describing and prescribing appropriate roles (e.g., Eagly, 1987; Wood & Eagly, 2012).

Evolutionary perspectives focus on the structural functionality of sex-role segregation. Irons (2001) suggested that people who are able to work together more efficiently have a better chance of survival – which is central to human reproduction. Indeed, sexual signalling and cooperative breeding theories hold that cooperative gendered behaviour is linked to high-fertility mating strategies (e.g., Bulbulia et al., 2015; Slone, 2008). Cooperative behaviour can be achieved via fixed strategies, such as enforcement (e.g., Gardner, Griffin, & West, 2009); however, for a cooperative system to endure it must be accepted by people and not merely externally coerced (e.g., Sidanius & Pratto, 2001). Establishing a system with unequal structural roles that facilitates cooperative behaviour (e.g., breeding) can be effectuated by institutionally advertised ideologies and beliefs, such as religiously promoted values and practices (Bulbulia et al., 2015; Slone, 2008).

Both perspectives hold that one factor in the maintenance of gendered division of labour is people's adoption and agreement with gender beliefs – specifically beliefs that conceptualize gender relations in a cooperative and intimate way (e.g., that men and women have unique but complementary social roles). In the current research we test whether people's endorsement of beliefs is linked to gendered division of labour by examining three different beliefs that each emphasize *cooperation* between men and women in ways that reinforce gender inequalities.

Religiosity and Supernatural Legitimacy

Gender role expectations are shaped through religious beliefs, which are enabled by a

wide array of cultural institutions (e.g., organizational structures, ritual practices, and teachings) that conspire to guide practical action. However, a particular strength of religious cooperation enhancement lies in the narrative of supernatural causation, i.e. the detection and intolerance of those who violate social norms, disrupt the social order and thus may fear supernatural punishment (e.g., Bulbulia, 2004). Religious beliefs establish gender roles by promoting traditional family values (Mikołajczak & Pietrzak, 2014) and encouraging a cooperative breeding system (Bulbulia et al., 2015). The promotion of religious values that are incorporated in religious teachings (Ellison & Bartkowski, 2002) and the use of legitimizing stereotypes and myths that religions supply, reinforce the legitimacy and stability of established gendered structures (Sidanius & Pratto, 2001). Previous research showed that religiosity is strongly related to gender inequitable beliefs (Perales & Bouma, 2019; Schnabel, 2015; Seguino, 2011), to values linked to gender stereotypes (Mikołajczak & Pietrzak, 2014), and to gender roles reflecting traditional division of labour (Ellison & Bartkowski, 2002). Thus, we expect that higher religiosity will be linked to greater gender divisions of labour at the individual level (i.e., more time allocated to household labour in women and more time allocated to financial labour in men).

Benevolent Sexism and Reward System

Ambivalent sexism theory (Glick et al., 1997; Glick & Fiske, 1996, 2001) suggests that attitudes towards women encompass both benevolent and hostile beliefs (i.e. are ambivalent) and are based on traditionalist ideas concerning women's roles. Benevolent sexism flatters and praises women superficially, while simultaneously and implicitly suggesting that they are inferior and lack ability or competence. By contrast, hostile sexism expresses derogatory characterizations of women who are seen to be stepping outside of their traditional role and hence, are unworthy of men's protection and admiration. Both hostile and benevolent sexism justify traditional gender roles and function as an effective reward–punishment system to foster cooperative behaviour. Evidence supporting the controlling function of sexism showed a correlation between exposure to sexism and challenges women face when stepping outside their traditional female role, such as inhibiting their power-related aspirations (Rudman & Heppen, 2003) and vocational goals (Fernández et al., 2006), creating self-doubt (Dardenne et al., 2007), and undermining cognitive performance (Vescio et al., 2005). Given the difficulties of overcoming structural inequality, women may prefer mates with provider qualities (Eagly, Eastwick, & Johannesen-Schmidt, 2009) and those with benevolently sexist attitudes because such attitudes are taken as signals of mate qualities

related to traditional male roles (e.g., protection and provision; Gul & Kupfer, 2018). Thus, we expect that higher endorsement of benevolent sexism will be linked to relatively more time allocated to household labour in women and more time allocated to financial labour in men.

Gender-Specific Meritocracy and False Consciousness

Jost and Banaji (1994) proposed that individuals have an unconscious tendency to rationalize and thus preserve existing social arrangements. Complementary but equal stereotypes of men and women stand as a basis for collaborative activities (Bem, 1970; Eagly & Steffen, 1984; Jost & Kay, 2005), and establish a sense that each sex has their own strengths and weaknesses that balance out those of the other sex (Kay et al., 2007). Due to this false consciousness, the system as a whole appears legitimate, just, and fair which, in turn, reduces ideological dissonance and provides palliative benefits (Jost & Hunyady, 2002). Empirical evidence suggests that exposure to gendered stereotypes increases ideological support for the gender system (Jost & Kay, 2005), and under induced threat, women find that a male dominated status quo is more desirable than systems based on greater gender equality (Kay et al., 2009). Developing a false consciousness inhibits collective action (e.g., participating in a protest for gender equality), as one is unlikely to take action against a system that is perceived to be fair and just (Becker & Wright, 2011). In sum, system justifying meritocratic beliefs are associated with a false sense that the gender system is fair, which in turn increases people's engagement in maintaining the system. Thus, we expect that higher gender-specific meritocracy will be linked to relatively more time allocated to household labour in women and more time allocated to financial labour in men.

The Overlap between Cooperative Gender Beliefs

These three cooperative belief systems have individually been identified as being important for understanding gender inequality. Additionally, it is apparent that these beliefs share content; they all promote traditional views about gendered behaviour and thus relate to one another. Religiosity is associated with the same set of ideological content that motivates system justification, while also assigning spiritual significance to the order of the human world (Jost et al., 2014). The correlation between religiosity and benevolent sexism has been demonstrated cross-culturally (Burn & Busso, 2005; Gaunt, 2012; Glick & Lameiras, 2002), while a causal link has been illustrated experimentally, whereby religious priming increases benevolently sexist attitudes (Haggard et al., 2018). There is also established evidence

regarding the association between religiosity and hostile sexism (Taşdemir & Sakallı-Uğurlu, 2010). Finally, ambivalent sexism is also linked to gender-specific meritocratic and justifying beliefs that picture gender relations as fair and just (e.g., Jost & Kay, 2005; Kay et al., 2009; Kay et al., 2007). The small-to-moderate overlap among the three beliefs indicates that each capture somewhat different aspects of characterizations about men and women as holding cooperative and complementary social roles. The similarities between these three beliefs and the apparent differences highlight the need for investigating which factor is most prominent in maintaining division of labour in modern society.

Overview of the Present Research

The current study aimed to test the extent to which three cooperative belief systems—religiosity, sexist attitudes, and meritocratic beliefs—uniquely predict differences in the gendered division of labour at the individual level, in a relatively egalitarian country. This study is theoretically novel because it is the first to benchmark theories of cooperative gender beliefs by testing the extent to which they uniquely predict gendered behaviour. We operationalized (potentially) gendered behaviour in two ways: People's hours allocated to domestic labour and hours allocated to financial labour. We tested our predictions in a cross-sectional sample of 9048 New Zealanders who, in 2013, participated in the New Zealand and Attitudes and Values Study—a nationally-representative panel sample (Sibley, n.d.). Examining the relationship between cooperative beliefs and gendered division of labour in New Zealand is particularly important because the factors underpinning inequality in egalitarian contexts may occur so subtly that, although still damaging for people, they already appear to be socially accepted (Chen et al., 2009; Glick et al., 2000; Overall & Hammond, 2018). For example, New Zealand was ranked seventh most egalitarian out of 149 countries in the Global Gender Gap report in 2018. However, despite New Zealand's relatively high egalitarianism, government statistics from 2009/10 showed that women's average unpaid work per day was almost twice that of men's unpaid work (4.33 hrs/day vs. 2.53 hrs/day; Statistics New Zealand, 2011, p. 5), and recently 53 per cent of surveyed New Zealanders agreed that women feel pressured to choose between family life and their career (Gender Equal NZ, 2018).

Hypotheses. First, we expected that the three cooperative beliefs—religiosity, benevolent sexism and gender-specific meritocracy—would be positively intercorrelated because of their shared content of cooperation between men and women (Hypothesis 1). Second, consistent with gendered patterns of time allocation found across the world (e.g.,

Treas & Drobnič, 2010), we expected that women would devote more time to domestic labour and less time to financial labour than men (Hypothesis 2). Finally, we hypothesized that gender differences in time allocation to domestic vs. financial labour will be partially explained by each of these beliefs (Hypothesis 3): For women, greater religiosity, benevolent sexism, and meritocratic beliefs will all be uniquely related to more domestic labour time and less financial labour time. For men, greater religiosity, benevolent sexism, and meritocracy will be uniquely associated with less domestic labour time, and more financial labour time.

Method

Participants and Procedure

The current study used data from Wave 5 (Year 2013) of the longitudinal New Zealand Attitudes and Values Study (NZAVS). Individuals were identified from the New Zealand electoral-roll and were posted a copy of the questionnaire. The sample contained a total of 18,264 participants (10,502 retained from one or more previous waves, 7,581 new additions from booster sampling, and 181 unmatched participants or unsolicited opt-ins). The current analyses were limited to 9048 participants (49.5 % of the total sample) who met criteria for this research i.e. people involved in a romantic relationship who cohabit with their partner. These restrictions enabled the selection of more serious romantic engagements. 5383 women and 3665 men who provided full or partial responses to our variables of interest were included. The mean age of women was 48.80 (*SD* = 11.40) and the mean age of men was 52.92 (*SD* = 11.89). Slightly more women (42.9 %, *n* = 2312) than men (38.5%, *n* = 1411) identified as religious, and roughly equal percentages of men (97.8%, *n* = 3585) and women (97.7%, *n* = 5267) were parents.

Measures

Time Allocation. Two dependent variables were used to predict time allocation: (1) Self-reported weekly hours spent with financial labour, and (2) with domestic labour. Participants were asked to ‘estimate how many hours they spent doing each of the following things last week: (a) Working in paid employment; (b) Housework/cooking’. Participants were instructed to enter ‘0 hours’ if they did not do that activity last week.

Religiosity. Level of religiosity was a continuous scale measuring religious identification. It was constructed from two items (“Do you identify with a religion and/or spiritual group?” and “If yes [to previous question], how important is your religion to how

you see yourself?"), and measured on an 8-point scale from 0 (*non-religious*) to 7 (*very important*).

Ambivalent Sexism. Attitudes towards women were assessed using shortened five-item scales for each type of sexism from the Ambivalent Sexism Inventory (ASI; Glick & Fiske, 1996); (1 = *Strongly Disagree* to 7 = *Strongly Agree*). Benevolent sexism (Cronbach's $\alpha = .72$) was measured using items 8, 9, 12, 19, and 22 of the ASI (e.g., "Every man ought to have a woman he adores"). Hostile sexism ($\alpha = .81$) was assessed using items 5, 11, 14, 15, and 16 of the ASI (e.g., "Women seek to gain power by getting control over men").

Gender-Specific Meritocracy. Gender-specific meritocracy was assessed using two items taken from Jost and Kay's (2005) gender-specific system justification items (1 = *Strongly Disagree* to 7 = *Strongly Agree*): "Men and women both have a fair shot at wealth and happiness in NZ" and "In general, relations between men and women in New Zealand are fair" (r (8936) = .48, $p < .001$).

Statistical Covariates. We used age, education, number of children at home, and hostile sexist attitudes as adjusted measurements. Older generations are expected to hold more traditional gender attitudes (Pampel, 2011), and level of education is known to be associated with greater gender egalitarian attitudes (Brines, 1994). Thus, we adjusted for age and education. Number of children in the household indicates more demand for housework (Baxter, Hewitt, & Haynes, 2008), and hence, may have biased our models. Although in egalitarian contexts subjectively positive beliefs and roles (e.g., benevolent sexism) are more prominent than outright hostility, hostile sexist beliefs continue to moderately correlate with benevolent sexist beliefs (e.g., Hammond, Milojev, Huang, & Sibley, 2017). Thus, as a standard practice in research on ambivalent sexism, to adjust for the potentially confounding effects of hostile sexism, we included it as a covariate in our analyses.

Results

For the statistical analyses the 3.4.0 version of R software (R Core Team, 2017) was used with *WRS2* (Mair & Wilcox, 2017); *Hmisc* v4.0.2 (Harrell, 2016); and *pscl* v1.4.9 (Zeileis, Kleiber, & Jackman, 2008). Before testing our main hypotheses, we ran univariate Analyses of Variance (ANOVA) to investigate possible sex differences in our variables of interest. As assumptions for ANOVA were violated in all cases, we used Wilcox's robust version to obtain F-statistics (Mair & Wilcox, 2017). Results from these analyses indicated that there were statistically significant differences between men and women for all variables. Specifically, women were younger than men, $F(1, 4654.42) = 196.62$, $p < .001$, $\xi = .23$. On

average, women were more educated $F(1, 4405.86) = 17.83$, $p < .001$, $\xi = .07$, and more religious $F(1, 4855.08) = 30.93$, $p < .001$, $\xi = .09$, than men. Women reported to have more children in their household than men, $F(1, 4709.1) = 19.94$, $p < .001$, $\xi = .07$. There was also a statistically significant gender gap in attitudes, showing that men adhered more strongly to gender inequitable beliefs: Men were higher than women on benevolent sexism, $F(1, 5053.83) = 209.51$, $p < .001$, $\xi = .22$, hostile sexism, $F(1,4728.49) = 435.84$, $p < .001$, $\xi = .33$ and gender-specific meritocracy, $F(1,4765.49) = 473.12$, $p < .001$, $\xi = .35$.

Descriptive statistics and bivariate correlations split by gender for all variables assessed in the current study are displayed in Table 2.1. Pearson's correlations between the ideological factors were assessed for women and men separately. There were statistically significant weak positive relationships between religiosity and both benevolent sexism and meritocracy for women. For men, the relationship between religiosity and benevolent sexism was weak and significant, but there was no statistically significant correlation detected between religiosity and meritocracy ($p = .817$). Additionally, there was a statistically significant weak positive correlation between benevolent sexism and meritocracy for both women and men. Although these correlations were weak and disproportionate between men and women, they all, except for that between religiosity and meritocracy for men, indicated support for Hypothesis 1 that the three belief systems would be positively correlated.

To analyse gendered division of labour we ran two regression analyses to predict the effects of religiosity (1), benevolent sexism, (2), and gender-specific meritocracy (3) on the amount of time men and women allocate to domestic labour (Model One) and to financial labour (Model Two). We simultaneously adjusted for the effects of age (a), education (b), hours of financial labour in Model One, and hours of domestic labour in Model Two (c), number of children at home (d), and hostile sexism (e). Results from the final models are reported in Table 2.2. As our response variables and some of our predictors (hours of labour, religiosity, and number of children at home) were zero-inflated, the Voung test (Vuong, 1989) and further dispersion statistics suggested zero-inflated regression models with a negative binomial distribution.

Table 2.1 *Descriptive statistics and bivariate correlations split by gender*

	1.	2.	3.	4.	5.	6.	7.	8.	9.
1. Hours of financial labour [a]	-	-.11*	-.03*	-.03*	-.02	.00	-.44*	.05*	.22*
2. Hours of domestic labour [a]	-.27*	-	-.01	.01	.01	-.05*	.03*	-.01	.04*
3. Religiosity [b]	-.04*	.07*	-	.16*	.06*	.00	.07*	.05*	.07*
4. Benevolent Sexism [c]	-.04*	.09*	.16*	-	.34*	.09*	.11*	-.25*	-.01
5. Hostile Sexism [c]	-.02	.05*	.10*	.48*	-	.12*	.01	-.20*	.00
6. Meritocracy [c]	-.05*	.03*	.05*	.13*	.16*	-	.05*	-.12*	-.03*
7. Age	-.05*	.01	.05*	-.02	-.02	.05*	-	-.12*	-.52*
8. Education [d]	.09*	-.07*	.04*	-.28*	-.26*	-.18*	-.16*	-	.11*
9. Number of children at home	-.05*	.15*	.07*	.03*	.01	-.05*	-.51*	.11*	-
Mean $_{women}$	22.89	15.99	2.09	3.68	2.78	4.57	48.80	5.02	1.16
SD $_{women}$	18.99	13.43	2.71	1.17	1.13	1.26	11.40	2.84	1.19
Mean $_{men}$	35.45	7.65	1.78	4.03	3.30	5.10	52.92	4.80	1.04
SD $_{men}$	20.55	7.43	2.58	1.07	1.61	1.17	11.89	2.87	1.13

Notes: Correlations below the diagonal are for women (*df* = 5381), correlations above the diagonal are for men (*df*=3663).

N = 9048, * p<.05, [a] Weekly hours of labour ranged between 0-168, [b] Religiosity ranged from 0 (non-religious) to 7 (very religious), [c] Scale ranged from 1 (strongly disagree) to 7 (strongly agree), [d] Education ranged from 0 (no qualification) to 10 (highest level of qualification),

Hours of domestic labour

Results from the final model, displayed in Table 2.2, indicated that men allocated fewer hours to domestic labour than women, hours of domestic labour for both men and women increased with age, and decreased with education. A greater number of children at home was associated with more hours allocated to domestic labour for both men and women, but more so for women as indicated by simple slope analysis (Women's *slope* = .100, *se* = 0.008, *t* = 12.199, *p* < *.001*; Men's *slope* = .070, *se* = 0.011, *t* = 6.132, *p* < .001). Financial labour time was negatively associated with domestic labour time for both men and women, and it was again moderated by gender (Women's *slope* = -.137, *se* = 0.006, *t* = -24.192, *p* < *.001*; Men's *slope* = -.088, *se* = 0.008, *t* = -10.470, *p* < .001). The association between hours of domestic labour and hostile sexism (*p* = .630), and its interaction with gender (*p* = .821) were not statistically significant. Religiosity had a weak but statistically significant positive association with hours of domestic labour, and it was moderated by gender. As shown in Figure 2.1 simple slope analyses indicated that highly religious women spent slightly more hours engaging in domestic labour than less religious women, even when adjusting for other beliefs (*slope* = .010, *se* = 0.003, *t* = 3.333, *p* = .001), but there was no statistically significant effect for men (*slope* = -.007, *se* = 0.005, *t* = -1.457, *p* = .145). Benevolent sexism also had a small but significant positive association with hours of domestic labour, which was again moderated by gender. As shown in Figure 2.2, endorsement of benevolent sexist attitudes was related to more hours allocated to domestic labour for women (*slope* = .043, *se* = 0.009, *t* = 4.778, *p* < .001), but there was no statistically significant effect for men (*slope* = -.001, *se* = 0.013, *t* = -0.079, *p* = .937). Although, the main meritocracy effect was not statistically significant (*p* = .609), its effect was moderated by gender. As Figure 2.3 shows, men with higher levels of meritocratic beliefs allocated fewer hours to domestic labour than men low on meritocracy (*slope* = -.038, *se* = 0.010, *t* = -3.957, *p* < .001), but there was no statistically significant effect for women (*slope* = .004, *se* = 0.007, *t* = 0.571, *p* = .568).

Table 2.2 *Zero-inflated Negative Binomial Models Predicting Division of Labour*

	Model 1. Hours of domestic labour					Model 2. Hours of financial labour				
	β	B	SE	CI 2.5%	CI 97.5%	β	B	SE	CI 2.5%	CI 97.5%
Intercept	-	2.724	0.010	2.705	2.742	-	2.506	0.008	2.490	2.521
Gender [a]	-0.026***	-0.633	0.016	-0.665	-0.601	0.006***	0.249	0.012	0.225	0.273
Age [b]	0.005***	0.005	0.001	0.003	0.006	-0.001**	-0.002	0.001	-0.003	-0.001
Education [b c]	-0.002**	-0.008	0.003	-0.013	-0.003	0.000	0.003	0.002	-0.001	0.007
Children at Home [b]	0.010***	0.100	0.008	0.084	0.116	-0.003***	-0.044	0.007	-0.057	-0.032
Hours of financial labour [d]	-0.018***	-0.137	0.006	-0.148	-0.126	-	-	-	-	-
Hours of domestic labour [d]	-	-	-	-	-	-0.006***	-0.150	0.012	-0.174	-0.126
Religiosity [b e]	0.002**	0.010	0.003	0.003	0.017	-0.000	-0.003	0.003	-0.009	0.002
Benevolent Sexism [b f]	0.004***	0.043	0.009	0.026	0.060	0.001	0.012	0.007	-0.002	0.026
Hostile sexism [b f]	0.000	0.004	0.009	-0.013	0.022	0.001	0.012	0.007	-0.003	0.026
Meritocracy [b f]	0.000	0.004	0.007	-0.010	0.018	-0.001	-0.010	0.006	-0.021	0.001
Children Home × Gender	-0.001*	-0.030	0.013	-0.056	-0.004	0.001***	0.052	0.009	0.034	0.070
Housework × Gender	-	-	-	-	-	0.003***	0.122	0.016	0.090	0.153
Financial work × Gender	0.048***	0.049	0.010	0.029	0.069	-	-	-	-	-
Religiosity × Gender	-0.004**	-0.017	0.006	-0.028	-0.005	0.000	0.000	0.004	-0.008	0.008
Ben.Sexism × Gender	-0.004**	-0.044	0.015	-0.073	-0.015	0.000	0.001	0.011	-0.020	0.021
Host.Sexism × Gender	0.000	0.003	0.014	-0.025	0.031	-0.000	-0.004	0.010	-0.023	0.016
Meritocracy × Gender	-0.009***	-0.042	0.012	-0.066	-0.018	0.001*	0.018	0.009	0.001	0.035

N = 9048, *** p<.001; ** p<.01; * p<.05; [a] Gender was contrast coded (0 = woman; 1 = man); [b] These variables were grand-mean centred; [c] Education ranged from 0 (no qualification) to 10 (highest level of qualification); [d] Financial work and Housework as predictors were log-centred; [e] Religiosity ranged from 0 (non-religious) to 7 (very religious); [f] Scale ranged from 1 (strongly disagree) to 7 (strongly agree)

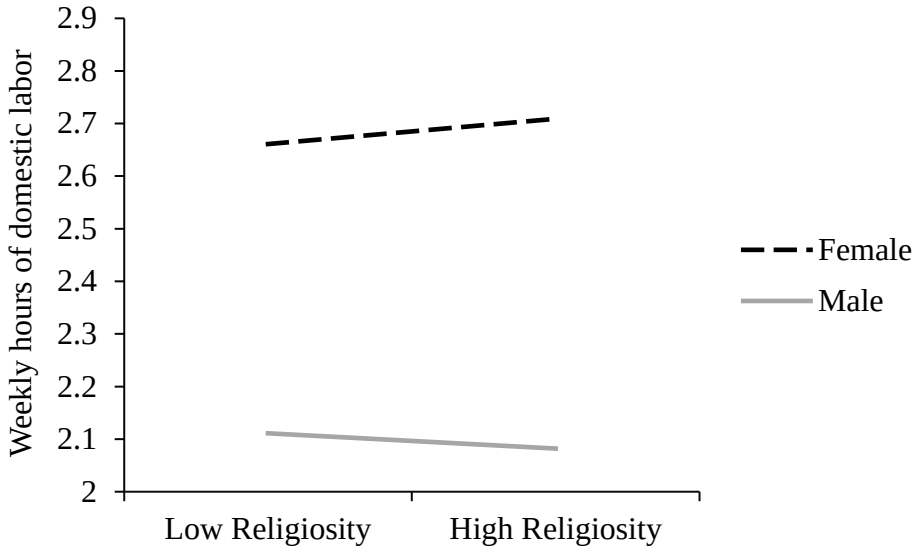

Figure 2.1. Interaction effect of religiosity and gender on weekly hours of domestic labour

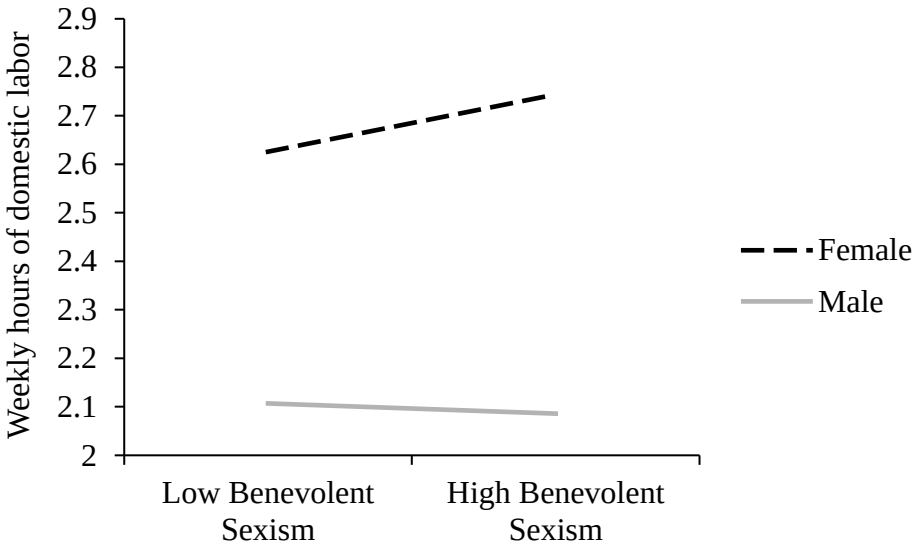

Figure 2.2. Interaction effect of benevolent sexism and gender on weekly hours of domestic labour

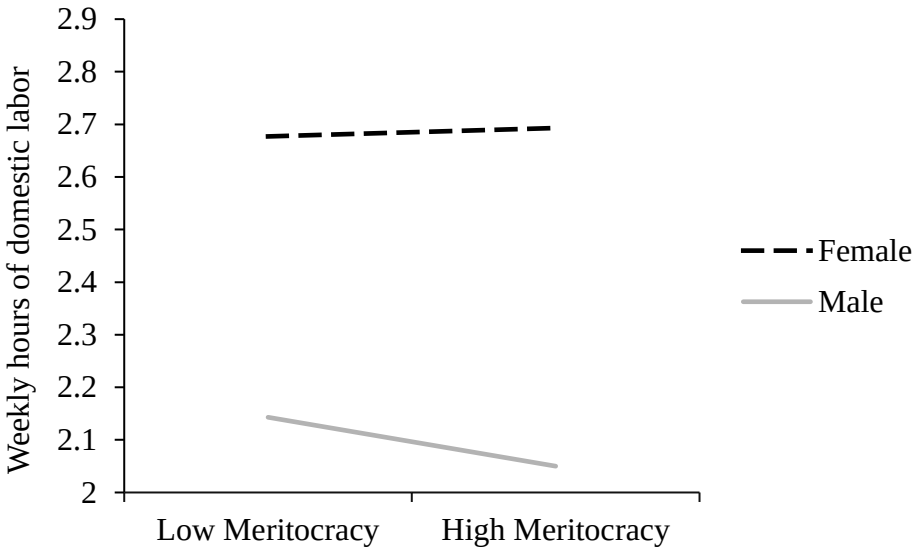

Figure 2.3. Interaction effect of meritocracy and gender on weekly hours of domestic labour

Hours of financial labour

Results from the final model predicting hours allocated to financial labour, displayed in Table 2.2, showed that, as expected, men allocated more hours to financial labour than women. For both men and women, age had a weak negative relationship with hours allocated to financial labour, while education (p = .15) was not a significant predictor. The effect of number of children at home was moderated by gender indicating that a greater number of children at home was associated with fewer hours allocated to financial labour for women (*slope* = -.044, *se* = 0.007, t = -6.736, p < .001), and more hours allocated to financial labour for men, however, the slope for men was not statistically significant (*slope* = .007, *se* = 0.007, t = 1.004, p = .315). Hours of domestic labour had a weak negative association with hours of financial labour for both men and women, and for women there was a much sharper drop in hours of financial labour than for men, as an effect of hours of domestic labour (Women's *slope* = -.150, *se* = 0.012, t = -12.270, p < *.001*; Men's *slope* = -.028, *se* = 0.010, t = -2.734, p < .01). Among the belief systems religiosity (p = .219), benevolent sexism (p = .090), and hostile sexism (p = .102) were not significant predictors and gender did not moderate any of these effects. These results indicated that, in our sample, religiosity and benevolent sexism did not explain statistically significant variance in time spent with financial labour, over and above that of the other predictor variables. The association between meritocracy and financial

labour was moderated by gender (Table 2.2). Despite this difference across gender, simple slope analysis indicated that slopes were not statistically different from zero (Women's *slope* = -.010, *se* = 0.006, *t* = -1.667, *p* = .096; Men's *slope* = .008, *se* = 0.007, *t* = 1.090, *p* = .276). Thus, results from these two models showed support for Hypothesis 2 and partial support for Hypothesis 3.

Discussion

We investigated whether three different types of cooperative gender beliefs are associated with gendered division of labour at the individual level. We did this by examining the extent to which religiosity, benevolent sexism, and gender-specific meritocracy uniquely predicted people's hours of domestic and financial work in a highly egalitarian country. Supporting *Hypothesis 1*, we found small-to-moderate intercorrelations between the three belief systems, indicating that religiosity, benevolent sexism, and gender-specific meritocracy overlapped in their depiction of men and women as having complementary yet separate gender roles, but also indicated that each belief system was distinct. Supporting *Hypothesis* 2, we found that the division of labour was strongly gendered: Women devoted more time to domestic labour and less time to financial labour relative to men, and this gender gap was larger for domestic labour than for financial labour. Partially supporting *Hypothesis 3*, higher levels of religiosity and benevolent sexism were associated with more time allocated to domestic labour for women, but not with less time allocated to domestic labour for men. Higher gender-specific meritocracy was linked to less time devoted to household labour for men but there was no effect for women. Although there was a relatively small gender gap in financial working hours, after controlling for demographic variables, none of the three belief systems explained the gender gap in financial labour time. In sum, the three cooperative gender beliefs had unique, statistically significant but very weak relations with gendered division of labour in theoretically consistent directions. The associations, however, were mainly present for women and were in the domestic domain.

Our research showed that more religious women were slightly more likely to adhere to religiously legitimized gender roles (e.g., homemaker, caregiver). This finding is consistent with existing literature on the cooperative religiosity perspective (e.g., Bulbulia et al., 2015; Slone, 2008), suggesting that religious systems foster cooperation within groups and between men and women by offering solutions to adaptive problems (Irons, 2001; Slone, 2008). Indeed, religiously legitimized values are linked to gender stereotypes (Mikołajczak & Pietrzak, 2014), which emphasize a cooperative gender system by attributing complementary

traits and roles to men and women. Although the uneven division of domestic labour reflects greater inequality, women's cognitive reframing of the benefits gained by religious involvement can offset experiences of unfairness (e.g., exclusion of women from certain roles in the church; Ozorak, 1996). However, we found *no* effects for men. It is possible that the dominant group indirectly benefits from convincing women to adhere to a traditional female role and thus, women's behaviour can be expected to more strongly relate to religious ideologies. In sum, our findings that division of labour is more gendered among people with stronger religious identification is consistent with theorizing that cooperative aspects of religiosity function to maintain a cooperative gender system.

Our study also extends prior work on sexism by providing evidence that women's endorsement of benevolent sexism is related to a greater amount of time devoted to domestic labour. This is consistent with benevolently sexist characterizations of women as being particularly suited to domestic-oriented roles and being deserving of reward for adopting these roles (e.g., "good" women should be provided for by their husbands; Glick & Fiske, 1996). Indeed, women who more strongly endorse benevolent sexism believe that their role is to manage household affairs and support their husband's career (Chen et al., 2009). Intriguingly, our results indicated that men's endorsement of benevolent sexism was *not* related to more time spent in financial labour, which we expected because of the pattern of related beliefs about taking a "provider" role (e.g., Chen et al., 2009; Glick & Fiske, 1996). Thus, by the gauge of hours devoted to labour in gendered roles, it appears that women who endorsed benevolent sexism were slightly more (vs. less) likely to perform traditional roles, but men were not. We return to this unexpected result later in the discussion.

We did not find evidence that women's religiosity or benevolent sexism predicted the time allocated to financial labour. This is inconsistent with prior research that indicates lower levels of female empowerment linked with religiosity at both the individual level (Perales (Perales & Bouma, 2019) and societal level (Schnabel, 2015; Seguino, 2011), as well as linked with benevolent sexism at both the individual level (Dardenne et al., 2007; Fernández et al., 2006) and societal level (Glick et al., 2000). It is possible that these links are difficult to identify in highly developed countries such as New Zealand in which financial labour is fairly common for women. In countries with greater societal level inequality, gender gaps at the individual level are also larger and people may have a stronger need for justifying ideologies, which feeds into a greater adherence to cultural beliefs and societal norms (see Kay et al., 2009; Treas & Tai, 2016). Thus, a stronger association between religiosity; sexist attitudes and gender inequalities at both individual and societal level might be apparent in less

egalitarian nations (e.g., Glick & Fiske, 2001; Seguino, 2011). In more egalitarian countries, individual level links between gender beliefs and women's life in traditionally masculine domains may appear in subtler forms such as assigning less challenging work tasks and giving more praise and less resources to women than men (e.g., King et al., 2012; Vescio et al., 2005).

Although, the effect of gender-specific meritocracy was not significant for women, we found that men who held stronger meritocratic beliefs were slightly more likely to allocate time in a gender typical fashion (i.e. less domestic labour). This is somewhat consistent with the theorizing that people have an unconscious tendency to rationalize the social order and develop a false consciousness that the gender system is fair and just (Jost & Banaji, 1994; Jost & Hunyady, 2002; Kay et al., 2007). Consequently, one pathway by which people respond to inequality is endorsement of system-maintaining attitudes and corresponding behaviour (Kay et al., 2009). Our results, however, are not in line with the notion that disadvantageous groups are even more likely to engage in system justification (e.g., Jost & Hunyady, 2002; Jost, Pelham, Sheldon, & Ni Sullivan, 2003). Thus, present study extends prior work on system justification by providing weak evidence that endorsing gender-specific meritocratic beliefs among the *advantaged* is significantly but very weakly linked to the maintenance of gender inequality as measured by gendered divisions of labour.

The discrepancies between men and women in the associations between endorsement of cooperative gender beliefs and time allocated to labour are particularly intriguing. Endorsement of cooperative gender beliefs were mainly related to women's adherence to traditional female roles in the domestic arena, but apart from gender-specific meritocracy, cooperative beliefs were not related to men's behaviour. This pattern may reflect a more fundamental gender belief that gender inequality is a "women's issue" (see United Nations, 2003). If women are erroneously assumed to be the primary agents of change for gender inequalities, their allocation of time to household vs. financial labour may be more closely related to justifying ideologies than men's time allocation. Among the three cooperative gender beliefs, religiosity and benevolent sexism offer women direct benefits for their cooperation in maintaining the gender system, and thus men indirectly benefit from women's cooperation. This may explain why these two beliefs were only associated with women's time allocation.

Among the three cooperative gender beliefs only gender-specific meritocracy was associated with less domestic work for men. That is, considering the weak strength of this association, our results provided minimal evidence that greater blindness to injustice between

men and women, was linked to men's time allocation reflecting unequal divisions of labour. Theory on meritocracy and justification suggests that there are both motivational and consequential dynamics of justifying processes (Jost, 2019; Jost et al., 2004; Jost & Hunyady, 2005), however, the cross-sectional nature of our analysis does not enable us to suggest a causal direction between attitudes and behaviour. It is possible that as there are gender gaps in division of labour, people endorse meritocratic beliefs due to the greater need to justify the system and reduce emotional distress. Alternatively, as justification reduces emotional distress, people are less likely to engage in behaviour that would support social change such as men increasing their domestic labour time (e.g., Becker & Wright, 2011; Jost & Hunyady, 2002, 2005; Jost et al., 2008; Wakslak, Jost, Tyler, & Chen, 2007).

Although New Zealand is highly egalitarian relative to other countries (World Economic Forum, 2018), we found substantial differences between women and men in the number of hours devoted to household vs. financial labour (i.e., women on average spent twice as much time in domestic work compared to men, and men on average spent more than ten hours in financial labour than women). Individuals' endorsement of cooperative gender beliefs uniquely explained some variance in allocation of time to household vs. financial labour, at least for women, but most of the variance in the gendered division of labour remained unexplained by cooperative gender beliefs. Attitude-behaviour research consistently shows that individual attitudes are weak-to-moderate predictors of behavioural outcomes (see Armitage & Christian, 2003). We suspect that the observation of only very weak links between individuals' endorsement of cooperative gender beliefs and the gender gaps in reported time allocation reflects the robustness of structural inequality in which individual effort does not prove to be effective enough to balance asymmetries between men and women (Fuwa, 2004). Gender inequality, including division of labour, is embedded within a complex system of both horizontal and vertical relations between individuals and groups, including interpersonal relations and economic structures (Fiske & Bai, 2019; Ridgeway & Smith-Lovin, 1999). Thus, a comprehensive understanding of structural gender inequalities likely requires integration of both evolutionary and social-constructionist perspectives as well as considering the relationships between cooperative gender beliefs and inequality at both the individual and the societal level.

One part of the explanation for why large gender gaps in the division of labour exist even in egalitarian countries is women's greater involvement in reproductive-related roles (e.g., Baxter et al., 2008). Research shows that children's presence in the household creates more gendered division of labour hindering women's, while fostering men's, professional

advancement (e.g., Baxter et al., 2008; Presser, 1994)—see exception in Sweden though (Dribe & Stanfors, 2009). In the current research, we found that a greater number of children at home was related to more time allocated to housework for both men and women, but the effect was stronger for women. Furthermore, hours spent with housework negatively correlated with the time people allocated to financial labour, and again this effect was stronger for women. Based on these trends, we suggest that the power of structural inequality manifests in such a way, that inequality in domestic work prevails over inequality in financial labour. The unequal division of domestic labour is, in turn, linked to the gender gap in financial labour which are both amplified by the demands of raising children.

A second reason for continued gender gaps in the division of labour may be the persistence of power differences related to the status and value placed on masculine vs. feminine societal roles (e.g., Croft, Schmader, & Block, 2015; England, 2010; Treas & Tai, 2016). Bourdieu (2001) suggests that the legacy of gender hierarchy is preserved by values, norms, and practices that are determined by domination. Applying values and practices that are products of domination in order to combat domination will inevitably reinforce domination. Therefore, assigning higher status to male-dominated roles and lower status to female dominated roles has two possible outcomes: 1) Women accept their devalued roles and lower status, or 2) Women hold the false belief that obtaining gender equality requires "upward mobility"—striving for the higher-status roles typically held by men (England, 2010). The relatively low status and value placed on women's societal roles dissuade men's involvement in household work or traditionally feminine career roles. This creates a stagnant system because "downward mobility" (i.e., men taking on lower status roles typically held by women) is unappealing. Thus, higher status groups are less motivated to acquire roles typically held by the lower status group (Croft et al., 2015; England, 2010).

Indeed, our results reflect the societal trends in developed countries, which show that women disproportionately enter male dominated roles, resulting in a smaller gender gap in financial labour but a large, persisting gap in domestic labour. As Croft et al. (2015) state, questioning the legitimacy of status asymmetry (i.e., female roles having lower status) might raise awareness and increase men's willingness to cooperate in the elimination of the unfairness in division of labour. Social institutions and governmental policies also play an important role in advancing equality as they channel cultural and societal values, open possibilities and opportunities for women and men, and shape the context for gender role playouts (Bergmann, 2000; Morrisson & Jütting, 2005; Seguino, 2007). Therefore, the call to

increase female participation in paid labour must be accompanied by men's involvement in domestic labour.

Strengths, Constraints on Generality, and Future Research Directions

A key strength of the present research is using a nationally representative sample from the highly egalitarian country of New Zealand. Many previous studies used convenience samples (e.g., university students; Burn & Busso, 2005) or focused on specific groups (e.g., Protestants; Ellison & Bartkowski, 2002). By using a large representative sample, our analyses were highly-powered and adjusted effects according to an appropriate distribution of demographic variables within country. Moreover, our analyses focused on belief systems that frame men's and women's role in a cooperative and subjectively positive way and thus we closely examined the beliefs that are more prominent than more overt and discriminatory beliefs (e.g., hostile sexism).

Nonetheless, a central constraint on generalizability is the unknown extent to which our results will be replicated in other countries. We expect that in less egalitarian countries, the association between endorsement of cooperative gender beliefs and the gendered division of labour will be stronger, because cross-cultural and longitudinal gender stratification research shows associations between improvement in societal-level gender equality and individuals' rejection of traditional values and ideologies (Glick et al., 2000; Seguino, 2007, 2011). There is also the unknown factor of how the results with generalize to similarly egalitarian nations: The associations between individual endorsement of cooperative beliefs and the gendered division of labour may depend on the ways gender equality is promoted within relatively egalitarian societies. For example, the relationship between cooperative gender beliefs and practice may be stronger if social policies – that are intended to advance gender equality—actually promote traditional values and roles (e.g., facilitating maternal leave vs. parental leave; Bergmann, 2000), and hinder women's economic empowerment (e.g., increasing female employment in low vs. high paying jobs; Seguino, 2007). Thus, future research is required in highly egalitarian *and* less egalitarian countries to establish evidence for how societal-level indicators of inequality (e.g., societal beliefs) relates to the individual-level associations between the gendered division of labour and endorsement of cooperative gender beliefs.

We operationalized gendered division of labour by assessing hours of housework and financial work. However, there are several indices of gender inequalities that fall outside the scope of this measure and our research. For example, individuals' endorsement of benevolent

sexism may not be related to hours of work for men in more egalitarian countries but may be related to their choice of careers (e.g., Rudman & Heppen, 2003). Effects of sexism also appear *within* careers, for example, benevolent sexist attitudes subtly undermine women's success by diminishing their cognitive performance (Dardenne et al., 2007), assigning less challenging tasks to women than to men (King et al., 2012), or giving more praise than financial reward to women relative to men (Vescio et al., 2005). Thus, future research should assess how different types of cooperative gender beliefs can be linked, not only to people's time allocation to traditionally female vs. male-dominated roles, but how these beliefs relate to behaviours and tasks within domains (e.g., organizing a meeting vs. organizing a holiday party within a workplace).

Although the cross-sectional nature of our analysis limits our ability to claim causal direction between endorsement of cooperative gender beliefs and inequality in division of labour, based on prior research, we suspect that the link between cooperative beliefs and inequality is reciprocal. On the one hand, longitudinal and cross-generational research has shown that societal level egalitarian norms and practices increase individuals' egalitarian beliefs and attitudes (Seguino, 2007, 2011; Van De Vijver, 2007), indicating that a shift from inequality towards equality affects people's belief and value systems. On the other hand, experimental research has shown that endorsement of stereotype-based beliefs and exposure to beliefs that maintain inequality hinder progress in women's empowerment (e.g., Becker & Wright, 2011; King et al., 2012), indicating that cooperative gender beliefs function to maintain inequality. As change in societal trends takes place relatively slowly, regardless whether beliefs or practice develop first, the corresponding effect will most likely operate with a lag. Future research should assess the cross-lagged effects of endorsing cooperative gender beliefs and divisions of labour on one another to reveal whether there is a reciprocal cause and effect relationship between cooperative beliefs and practice, or it is one-directional.

Conclusion

Theoretical accounts for why gender inequality persists in division of labour even in the most egalitarian countries highlight the important role of belief systems that characterize men and women as having cooperative traits and roles. The present study examined three types of cooperative gender beliefs by modelling the extent to which religiosity, benevolent sexism, and meritocratic beliefs uniquely predict gender differences in time allocated to domestic and financial labour. We found small overlaps between the three beliefs systems. Women's greater religiosity and benevolent sexism, but not meritocracy, was related to more time

allocated to domestic labour, while men's domestic labour time was only related to their endorsement of meritocratic beliefs. These results provide novel evidence that these are distinct but similar types of cooperative gender beliefs, which play a statistically significant but small role in people's time allocation in domestic domains but a large amount of variance in the gap between men and women in the division of labour remains unexplained. Thus, our study highlights the need to further examine structural inequality and how endorsement of cooperative gender beliefs relates to it across countries with different levels of societal equality.

III. COOPERATIVE GENDER BELIEFS ARE LINKED TO FERTILITY

Study 1 differentiated three *types* of cooperative gender beliefs and examined their conceptual and functional overlap. Prior research has used these different measures with little cross-reference between disciplines, thus it was necessary to assess whether these types of cooperative gender beliefs are different in content and/or function. Measures of religiosity, benevolent sexism, and meritocracy were all weakly correlated, and—apart from meritocracy—were weakly linked to the time women allocated to unpaid domestic labour. Amongst these measures benevolent sexism had the strongest effect for women, distinguishing it as a relatively new and effective indicator of cooperative gender beliefs that requires further examination in egalitarian contexts. In sum, Study 1 showed that two of these measures were independently related to costly socioeconomic outcomes for women, specifically asymmetrical gender roles in which women allocated more time to unpaid domestic labour. These results suggest that these measures are distinct indicators of cooperative gender beliefs but that they also share content and function.

A related issue of asymmetrical gender roles that emerged in Study 1 is women's greater involvement in reproductive-related roles. The literature on gender inequalities and reproductive outcomes has theorised that heterosexual interdependency along with women's limited socioeconomic opportunities create asymmetrical gender relations and thus, adopting (and seeking for partners who adopt) cooperative gender beliefs are reflective of individuals' reproductive success. Evolutionary and social-constructionist accounts have assumed that endorsement of cooperative gender beliefs serves two seemingly distinct but related functions: endorsement leads to reproductive benefits for the individual, and/or endorsement justifies inequalities stemming from imbalanced gender roles. Yet, no empirical test has previously provided evidence for either of these claims.

Next, to assess the possibility of a bidirectional link between cooperative gender beliefs and reproductive outcomes, I use structural equation modelling to test the cross-lagged effects of individuals' endorsement of cooperative gender beliefs—as measured by benevolent sexism in Study 2—and individuals' fertility rate over a two-year period (outlined in Table 1.1). By doing so, I provide an illustrative way to test two possible *functions* of cooperative gender beliefs that have previously been suggested but never tested. By integrating both evolutionary and social-constructionist accounts, next I to assess whether cooperative gender beliefs function to maximize reproductive benefits, and/or serve as justification for new inequalities that heterosexual parents experience.

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Abstract

Is having children related to benevolent sexism? Two theoretical accounts—benevolent sexism as system justification and benevolent sexism as a mating strategy—suggest the possibility of a positive and bidirectional association. Gender disparities in childrearing could prompt inequality-justifying endorsement of benevolent sexism *and/or* endorsing benevolent sexism could promote traditional gender roles that facilitate having more children. We assessed the bidirectional associations between individuals' fertility rate and their endorsement of benevolent sexism over a two-year period in a large national panel sample of New Zealanders (N = 6,540). Structural equation modelling that having a greater number of children was associated with stronger endorsement of benevolent sexism two years later, but no evidence emerged for a reliable relationship in the reverse direction. This study illustrates ways to tentatively test predictions of theoretical accounts on sexism and identifies new, though small, evidence for system justification theory.

Individuals' fertility rate is associated with benevolent sexism

Investment in childrearing creates new demands for parents which coincide with increased socioeconomic inequalities. For example, parenthood is associated with declines in women's paid labour, earnings and career opportunities as well as increases in women's unpaid labour and men's paid labour and earnings (Adema et al., 2015; Cech & Blair-Loy, 2019; Ministry for Women, 2018; Nitsche & Grunow, 2016; Yavorsky, Kamp Dush, & Schoppe-Sullivan, 2015). According to ambivalent sexism theory, this inequality is linked with endorsement of *benevolent sexism*—subjectively positive and patronizing beliefs—toward women who invest in relationship-oriented and childrearing roles (Chen et al., 2009; Glick & Fiske, 1996; Gul & Kupfer, 2018; Johannesen–Schmidt & Eagly, 2002; Overall & Hammond, 2018). Two contrasting but compatible theoretical accounts of benevolent sexism suggest that there should be a positive and bidirectional link between individuals' fertility rate (i.e., the number of children individuals have) and their endorsement of benevolent sexism. System justification theory suggests that experiences of inequality motivate people to endorse attitudes that legitimize, justify and maintain that inequality (Jost & Kay, 2005; Kay et al., 2009; Laurin, Gaucher, & Kay, 2013). The gender inequalities of childrearing might therefore foster endorsement of benevolent sexism. In contrast, an evolutionarily-informed account proposes that endorsement of benevolent sexism generates the conditions for reproductive success in heterosexual relationships, such as by promoting traditional mate preferences and adoption of traditional gender roles (Glick & Fiske, 1997; Gul & Kupfer, 2018; Jackman, 1994). In sum, existing theories suggest a reciprocal relationship between individuals' fertility rate and their endorsement of benevolent sexism that has been untested, likely due to the inherent methodological difficulties. The current research is the first to explore these associations in a preliminary way. We utilize a large national panel sample of New Zealanders (N = 6,540; Sibley, n.d.) to model the bidirectional lagged-effects of people's fertility rate and their endorsement of benevolent sexism across a two-year span.

Traditional gender beliefs, fertility, and postnatal inequalities

A key factor that links individuals' fertility rate with traditional gender beliefs is the increased gender inequalities that new parents experience. Women's parental investment is significantly greater than that of men (i.e., gestation and lactation; Trivers, 1972), and parenthood magnifies gender inequalities in division of labour (e.g., Nitsche & Grunow, 2016; Yavorsky et al., 2015), career trajectories (Cech & Blair-Loy, 2019), and financial

prospects (e.g., Grimshaw & Rubery, 2015). For example, mothers are more likely than fathers to make family accommodating changes at the expense of their career (Treas & Hilgeman, 2007). Across OECD countries, paternity leave is generally much shorter than maternity leave (on average 9 weeks vs. 18.5 weeks) and sharable parental leave is predominantly used by mothers rather than fathers (Adema et al., 2015). Across the world, new mothers experience sharp declines in working hours and income (Grimshaw & Rubery, 2015); and the accompanying earning disadvantage appears to continue throughout the lifespan even in relatively egalitarian countries like New Zealand (Ministry for Women, 2018). Thus, heterosexual parents are typically exposed to large, new gender inequalities.

Ambivalent sexism theory states that two ideologies—*hostile sexism* and *benevolent sexism*—function to legitimize and maintain gender inequalities (Glick & Fiske, 1996, 1997). Hostile sexism consists of overtly negative attitudes toward women who challenge men's power, such as career women (e.g., "Women seek to gain power by getting control over men"; Glick & Fiske, 1996). Benevolent sexism consists of subjectively positive but patronizing attitudes toward women who support men's power, such as women who prioritize their male partner's career aspirations over hers (e.g., "A good woman should be set on a pedestal by her man"), and it maintains inequality in subtle ways, such as by praising women who adopt traditional roles (Glick et al., 1997; Glick & Fiske, 1996, 1997).

These traditional gender beliefs idealize men and women as a cooperative unit with divided work duties in which men have a providing role and women are responsible for household maintenance and childcare (e.g., Chen et al., 2009; Kay et al., 2007; Wood & Eagly, 2002; Zentner & Eagly, 2015). The cooperative nature of heterosexual relationships—particularly those who have children—derives from the mutual dependency of sexual reproduction (Buss & Schmitt, 1993; Trivers, 1972). Although gender roles are constrained by sex differences in reproduction, they are responsive to local conditions and supported by cultural beliefs (e.g., Aassve et al., 2014; Chen et al., 2009; Ickes, 1993; Wood & Eagly, 2002; Wood & Eagly, 2012). Thus, idealizing gender relations as cooperative is a product of the coevolution of human mating strategies and our cultural heritage.

The reciprocal relationship between traditional gender roles—underpinned by cooperative gender beliefs—and reproductive outcomes is an assumed implication of prior research in psychology (Glick & Fiske, 1996; Zentner & Eagly, 2015); sociology (Jackman, 1994); political science (Inglehart & Norris, 2003); and economics (Becker, 1974). Empirical studies have established a triangular pattern of associations between traditional gender attitudes and traditional partner preference with the adoption of traditional gender roles (i.e.,

provider vs. caregiver; Aassve et al., 2014; Eastwick et al., 2006; Johannesen–Schmidt & Eagly, 2002; Nitsche & Grunow, 2016); parenthood with traditional gender role-attitudes (Baxter, Buchler, Perales, & Western, 2015); and parenthood with adoption of more traditional gender roles (Baxter et al., 2008; Nitsche & Grunow, 2016; Treas & Tai, 2016; Yavorsky et al., 2015). These empirical studies are all consistent with the idea that people's traditional gender beliefs are reciprocally linked with their adoption of traditional gender roles and their fertility rate. As we discuss next, the *direction* of this association is relevant to two current theories on the sources and functions of benevolent sexism.

Benevolent sexism as system justification: More children predicts benevolent sexism? One theory for why people's fertility rate will be positively associated with endorsement of benevolent sexism is that the experience of heightened gender inequalities in parenthood prompt people to endorse sexist beliefs that justify those inequalities. System justification theory states that people have a strong motivation to preserve positive attitudes towards inequalities that appear to be persistent and inevitable. That is, both advantaged and disadvantaged groups are motivated to justify inequality to reduce the unpleasant feelings of unfairness, meaning that they can perceive social relations as fair, just and even desirable (Jost & Banaji, 1994; Kay et al., 2009; Laurin et al., 2013). Indeed, people's tendency to rationalize injustice increases as anticipated inequalities become their current reality (Laurin, 2018), and they are more likely to rationalize conditions from which they cannot leave (Laurin, Shepherd, & Kay, 2010). Benevolent sexism is a particularly appealing justification for gender inequality because it positively evaluates women in traditional gender roles as being "pure" and "morally superior" (Glick et al., 1997; Glick & Fiske, 1996; Kay et al., 2007; Ramos, Barreto, Ellemers, Moya, & Ferreira, 2018). Thus, system justification theory suggests that a greater number of children will predict greater endorsement of benevolent sexism for both men and women over time.

Benevolent sexism as a mating strategy: Benevolent sexism predicts more children? A second theory for the association between individual's fertility rate and their endorsement of benevolent sexism is that in a sex-role and gender-role divided society anticipated postnatal inequalities encourage the adoption of cooperative gender beliefs to maximize men's and women's reproductive benefits. Parenthood creates new inequalities undermining women's societal status and increasing their interpersonal dependency (Grimshaw & Rubery, 2015; Huber, 2016; Nitsche & Grunow, 2016; Rippeyoung & Noonan, 2012). These anticipated inequalities indicate that *for women* securing a reliable male partner with traditional providing potentials; and respectively *for men*, signalling desirable male

characteristics are still effective mating strategies (Gul & Kupfer, 2018; Wood & Eagly, 2002; Zentner & Eagly, 2015). Accordingly, across cultures, women place a higher importance on romantic partners' dependability and stability compared to men (Lippa, 2007; Shackelford, Schmitt, & Buss, 2005), and have prevailing preferences for partners' providing capacity (Buss, Shackelford, Kirkpatrick, & Larsen, 2001). Endorsement of benevolent sexism signals traditional mate qualities reflecting traditional relationship roles (Eastwick et al., 2006; Gul & Kupfer, 2018; Johannesen–Schmidt & Eagly, 2002), and offers women security, protection and commitment for fulfilling traditional role expectations (Cross & Overall, 2018; Cross, Overall, & Hammond, 2016). Indeed, even highly feminist women—being aware of the undermining effects of benevolent sexism (e.g., restricting their agency)—express relative preferences for men who endorse benevolent sexism as romantic partners compared to hostile sexism, ambivalent sexism or no sexism (Bohner, Ahlborn, & Steiner, 2010), because of their *perceived willingness to provide*—after accounting for other effects such as perceived warmth (Gul & Kupfer, 2018). Thus, the mating strategy hypothesis suggests that endorsement of benevolent sexism will predict a higher fertility rate (i.e., number of children) for both men and women over time.

Reciprocal links. These two theoretical perspectives are not mutually exclusive. In fact, they *both* emphasize that the structure of traditional heterosexual relationships, particularly those that have children, have inherent inequalities. Together, these perspectives suggest a process in which (a) inequalities prompt justifying beliefs which then perpetuate those inequalities; and (b) encourage mating strategies which are based upon, and further lead to inequalities. Accordingly, in the current research we conduct preliminary tests of whether the number of children that people have is positively associated with their endorsement of benevolent sexism, and the potential for this association to be bidirectional across time.

Current research

To assess the bidirectional relationship between individuals' number of children and their endorsement of benevolent sexism, we conducted a cross-lagged analysis across a two-year period on a large panel sample of the relatively egalitarian country of New Zealand (N = 6,540; see World Economic Forum, 2018). Our rationale for the timespan was based on fertility research indicating that 92% and 82% of women in the age groups of 19-26 and 35-39-years-old, respectively, succeed to conceive within a year with regular intercourse at a frequency of twice per week (Dunson, Baird, & Colombo, 2004). More recent large-scale data also indicates that women in the top 10% of predicted probabilities have 88% chance of

pregnancy over six menstrual cycles (Liu et al., 2018). Existing research on the development of sexist attitudes also indicates that changes in endorsement of benevolent sexism are detectable over the timespan of 9-months to a year (Hammond, Overall, & Cross, 2016). Thus, two years is a reasonable preliminary timespan to observe potential changes in the number of children and in endorsement of benevolent sexism.

Our study makes two major contributions to the literature on benevolent sexism: First, we explore two theoretical accounts on the functions of benevolent sexism—which differ in their focus on one of the outcomes vs. one of the sources of gender inequalities—to build a comprehensive theoretical framework for the relationship between individuals' reproductive outcomes and their endorsement of benevolent sexism. Second, we tentatively test this theoretical framework by assessing the time-lagged direction of the relationship between individuals' fertility rate and their endorsement of benevolent sexism. Given the methodological difficulties of testing associations involving fertility rate at the individual level, we tested our hypotheses in an exploratory fashion: For both men and women we expected a positive association between endorsement of benevolent sexism and number of children cross-sectionally (Hypothesis 1). Following system justification theory, a greater number of children at Time 1 would predict a higher level of benevolent sexism two years later, at Time 2 (Hypothesis 2). Following mating strategy theory, a higher level of benevolent sexism at Time 1 would predict a greater number of children at Time 2 (Hypothesis 3).

Method

Participants and Procedure

The current study used data from the Wave 4 (year = 2012; Time 1) and Wave 6 (year = 2014; Time 2) New Zealand Attitudes and Values Study (NZAVS; Sibley, n.d.). Individuals were posted a copy of the questionnaire from the New Zealand electoral-roll and sampled a total of 12,182 in Wave 4 and 15,822 in Wave 6 with a year-to-year retention rate of about 80%. We confined our analyses to 6,540 participants who provided full responses to the measures of our interests at both waves. Of the 6,540 participants, 4177 were women and 2363 men, 74.86% of women and 79.69% of men were parents in 2012, which grew up to 76.32% for women and 81% for men in 2014. Men on average had more children (M = 2.05, SD = 1.49) than women (M = 1.86, SD = 1.47) in 2012 and in 2014 (Men: M = 2.10, SD = 1.49; Women: M = 1.91, SD = 1.47). Parents were significantly higher on benevolent sexism (M = 3.85, SD = 1.14) than non-parents at Time 1 (M = 3.50, SD = 1.16) in 2012 [F(1,

1468.55) = 88.66, $p < .001$, $\xi = .21$]; and at Time 2 (Parents: $M = 3.85$, $SD = 1.16$; Non-parents: $M = 3.45$, $SD = 1.19$; [$F(1, 1374.28) = 122.38$, $p < .001$, $\xi = .25$)].

Measures

Number of children. To assess people's fertility rate, we used a single item "How many children have you given birth to, fathered, or adopted?", ranging from 0–14. Our analyses were restricted to respondents aged 18-55 with an increase in number of children ranging between 0–3 over two years. We excluded 2 individuals reporting having 7 and 8 children between the two-time points; 156 individuals reporting loss of children; and 61 individuals over the age of 55 reporting any increase in number of children. We imposed these restrictions because even if these reported numbers reflect reality, we did not expect our theoretical predictions to generalize to groups of people with unusual circumstances (e.g., losing a child). Of the 6,540 total cases, 290 people reported an increase in number of children (270 people reported to have one child; 18 people reported two; and 2 people reported to have three children), which yielded in a total of 312 additional children over two years.

Ambivalent Sexism. Attitudes towards women were assessed using shortened five-item scales for each type of sexism from the Ambivalent Sexism Inventory (ASI; Glick & Fiske, 1996); (1 = *Strongly Disagree* to 7 = *Strongly Agree*). Benevolent sexism (Cronbach's $\alpha_{T1} = .73$ and $\alpha_{T2} = .76$) was measured using items 8, 9, 12, 19, and 22 of the ASI and hostile sexism ($\alpha_{T1} = .82$ and $\alpha_{T2} = .82$) was assessed using items 5, 11, 14, 15, and 16 of the ASI (for item wording, see Glick & Fiske, 1996).

Statistical Covariates. As it is standard for research on ambivalent sexism, we statistically adjusted for people's endorsement of hostile sexism (See Hammond & Overall, 2017). We also included age, education, and socioeconomic status as covariates given their established associations with gender attitudes and parenthood (e.g., Pampel, 2011; Schober & Scott, 2012). To control for socioeconomic status, we used the New Zealand Index of Deprivation 2013 (Atkinson, Salmond, & Crampton, 2014), which assigns relative deprivation scores to small neighbourhood area-units across the country (1 = *affluent* to 10 = *deprived*). The index comprises weighted data relating to receipt of government benefits, income, home ownership, family structures (proportion of single-parent families), employment, qualifications, housing, access to transport and communication.

Results

To test the association between endorsement of benevolent sexism and number of children, first, we conducted a cross-sectional analysis at T1. Then, we conducted a structural equation model to examine the cross-lagged effects of endorsement of benevolent sexism and number of children across T1 and T2. Descriptive statistics and bivariate correlations are displayed in Table 3.1. As expected, benevolent sexism had a positive small correlation with number of children at both time points. Benevolent sexism at T1 had a strong positive correlation with benevolent sexism at T2. The correlation of number of children between T1 and T2 was extremely high due to the large majority of the sample not increasing in the number of children that they have. For the main analyses we first entered only the main predictors and gender interactions in the model, and in the second step we entered all the control variables with gender interactions to control for any gender variances. Confidence intervals were estimated with 20,000 bias-corrected bootstrap draws. Statistical analyses were conducted in Mplus version 8.1 (Muthen & Muthen, 2017).

Table 3.1 *Descriptive Statistics and Bivariate Correlations*

	1.	2.	3.	4.	5.	6.	7.	8.
1. Time 1 Age	-	-	-	-	-	-	-	-
2. Time 1 Education [a]	-.18***	-	-	-	-	-	-	-
3. Time 1 Deprivation [b]	-.05***	-.15***	-	-	-	-	-	-
4. Time 1 Hostile Sexism [c]	.04**	-.22***	.08***	-	-	-	-	-
5. Time 1 Benevolent Sexism [c]	.10***	-.27***	.10***	.43***	-	-	-	-
6.Time 1 Number of Children [d]	.46***	-.16***	.03*	.06***	.16***	-	-	-
7.Time 2 Benevolent Sexism [c]	.12***	-.28***	.11***	.38***	.74***	.16***	-	-
8. Time 2 Number of Children [d]	.42***	-.15***	.03**	.06***	.16***	.99***	.17***	-
Mean	51.25	4.93	4.68	2.95	3.77	1.93	3.76	1.98
SD	14.35	2.86	2.74	1.19	1.15	1.48	1.17	1.48

Note. N = 6,540; df = 6,538; *** p<.001; ** p<.01; * p<.05; [a] Education ranged from 0 (no qualification) to 10 (highest level of qualification); [b] Deprivation ranged from 1 (affluent) to 10 (deprived); [c] Scale ranged from 1 (strongly disagree) to 7 (strongly agree), [d] Number of children ranged between 0-14; the correlations for number of children do not account for zero-inflation.

Cross-sectional Analysis. Results are displayed in Table 3.2. As expected, a greater number of children was associated with a higher level of benevolent sexism. Results from the basic model indicated that this association was stronger for men than for women, however, after controlling for possible confounding effects, there was no evidence that this effect significantly differed between men and women (p = .319). Hostile sexism was positively associated with benevolent sexism for both men and women, but more so for women than for men. There was no evidence that the main effect of age was related to benevolent sexism (p = .062), however it did significantly differ between men and women (for detailed differences in sexist attitudes across age and gender, see Hammond et al., 2017). Education had a negative, while socioeconomic deprivation had a positive significant relationship with benevolent sexism, and there was no evidence that these effects significantly differed across gender (p = .130 and p = .107 respectively). Thus, results from these analyses supported *Hypothesis 1*, that endorsement of benevolent sexism was positively associated with number of children.

Table 3.2 *Cross-sectional Multiple Regression Models Predicting Benevolent Sexism at T1*

	Benevolent Sexism – basic model				Benevolent Sexism – full model			
	β	SE	CI 2.5%	CI 97.5%	β	SE	CI 2.5%	CI 97.5%
Gender [a]	0.035**	0.011	0.030	0.138	0.033**	0.012	0.024	0.133
Hostile Sexism [b c]	0.489***	0.015	0.445	0.505	0.440***	0.016	0.396	0.459
Number of Children [b d]	0.105***	0.015	0.058	0.104	0.088***	0.017	0.042	0.094
Hostile Sexism × Gender	-0.119***	0.016	-0.236	-0.137	-0.105***	0.016	-0.215	-0.115
Number of Children × Gender	0.037*	0.014	0.012	0.084	0.016	0.016	-0.02	0.06
Age [b]					-0.031	0.016	-0.005	0.000
Education [b e]					-0.172***	0.015	-0.081	-0.058
Deprivation [b f]					0.062***	0.014	0.015	0.038
Age × Gender					0.072***	0.015	0.006	0.014
Education × Gender					0.022	0.014	-0.004	0.033
Deprivation × Gender					-0.022	0.014	-0.034	0.003

N = 6,540, *** *p*<.001; ** *p*<.01; * *p*<.05; [a] Gender was contrast coded (0 = woman; 1 = man); [b] These variables were centred; [c] Scale ranged from 1 (strongly disagree) to 7 (strongly agree); [d] Number of children ranged between 0-14; [e] Education ranged from 0 (no qualification) to 10 (highest level of qualification); [f] Deprivation ranged from 1 (affluent) to 10 (deprived).

Cross-lagged Analysis. In the second instance, we ran a structural equation model to predict the cross-lagged effects of endorsement of benevolent sexism and number of children across T1 and T2. In this model, benevolent sexism at T2 was one outcome and number of children at T2 was the other outcome. Results from these models are displayed in Table 3.3.

Regression model predicting benevolent sexism. In the first step we only examined main effects without our control variables. Results indicated that number of children at T1 had a statistically significant positive association with benevolent sexism at T2; see Figure 3.1. In the next step we included our control variables which decreased the effect size of number of children on benevolent sexism, but the effect remained statistically significant. Education was negatively, while socioeconomic deprivation and hostile sexism were positively and statistically significantly linked to benevolent sexism. No evidence was found that age, and any of the gender interactions were significantly related to benevolent sexism. Thus, results from these analyses supported *Hypothesis 2*, indicating that a greater number of children predicted a higher level of benevolent sexism over two years.

Zero-inflated count model predicting residual variance in number of children. The excess of zeros in number of children at both time points was large (T1 n = 1530 and T2 n = 1438). Thus, the Vuong test (Vuong, 1989) suggested a zero-inflated Poisson model to predict number of children. While adjusting for the zero-inflation in number of children—not presented—, results from both basic and full models showed no evidence that endorsement of benevolent sexism at T1 was statistically significantly associated with number of children at T2. Only socioeconomic deprivation had a statistically significant small negative relationship with number of children. Thus, these results did not provide support for *Hypothesis 3*, identifying no evidence in our sample that endorsement of benevolent sexism predicted people's number of children over a two-year period.

Table 3.3 *Cross-lagged Panel Analysis Predicting Number of Children and Benevolent Sexism over a two-year Period*

	Number of Children Time 2				Benevolent Sexism Time 2			
	β	SE	CI 2.5%	CI 97.5%	β	SE	CI 2.5%	CI 97.5%
Gender [a]	0.008	0.019	-0.024	0.059	0.041***	0.009	0.058	0.141
Age [b]	0.103	0.054	-0.001	0.006	0.011	0.012	-0.001	0.003
Education [b c]	0.005	0.018	-0.007	0.006	-0.063***	0.012	-0.035	-0.017
Deprivation [b d]	-0.048**	0.017	-0.015	-0.003	0.040***	0.011	0.008	0.026
Hostile Sexism T1 [b e]	-0.013	0.035	-0.036	0.02	0.078***	0.013	0.052	0.103
Benevolent Sexism T1 [b e]	0.018	0.051	-0.030	0.053	0.675***	0.011	0.662	0.712
Number of Children T1 [b f]	0.960***	0.048	0.293	0.415	0.029*	0.012	0.004	0.042
Age × Gender	-0.019	0.034	-0.004	0.004	0.019	0.012	-0.001	0.006
Education × Gender	-0.003	0.015	-0.008	0.009	-0.002	0.011	-0.016	0.013
Deprivation × Gender	-0.023	0.015	-0.016	0.003	-0.017	0.01	-0.027	0.002
Hostile Sexism × Gender	0.023	0.025	-0.017	0.051	-0.025	0.013	-0.080	0.000
Benevolent Sexism × Gender	-0.009	0.032	-0.056	0.037	0.009	0.011	-0.024	0.056
Number of Children × Gender	-0.013	0.061	-0.097	0.045	0.001	0.011	-0.028	0.031

N = 6,540, *** *p*<.001; ** *p*<.01; * *p*<.05; [a] Gender was contrast coded (0 = woman; 1 = man); [b] These variables were centred; [c] Education ranged from 0 (no qualification) to 10 (highest level of qualification); [d] Deprivation ranged from 1 (affluent) to 10 (deprived); [e] Scale ranged from 1 (strongly disagree) to 7 (strongly agree); [f] Number of children ranged between 0-14.

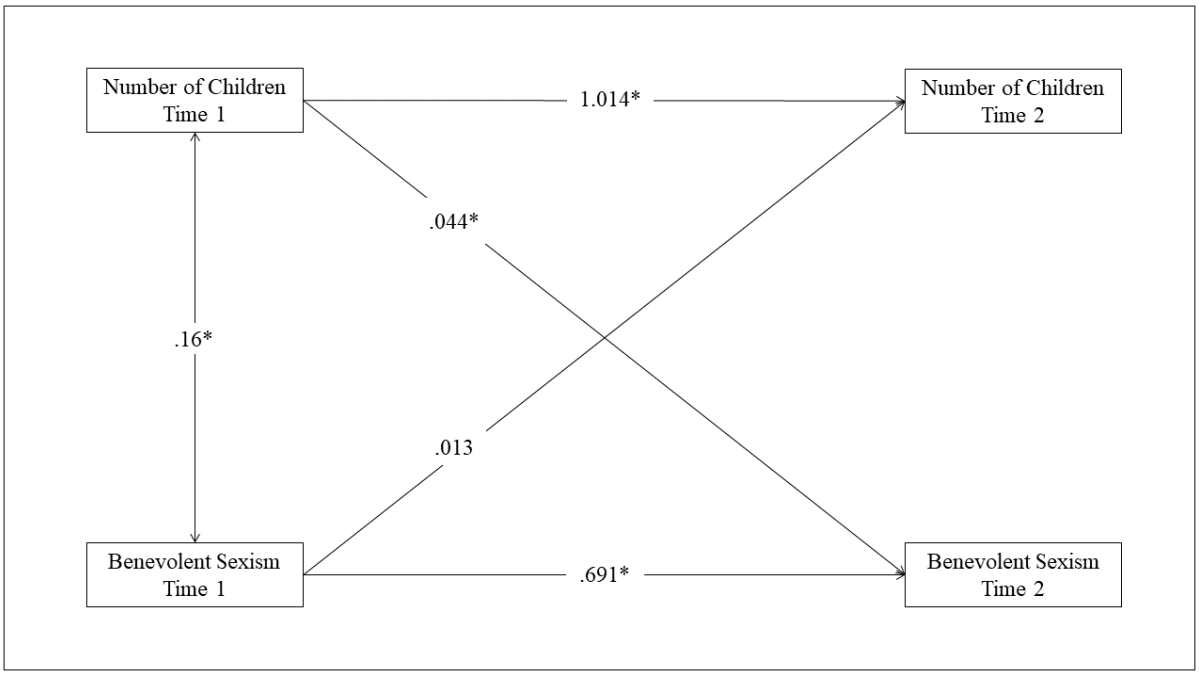

Figure 3.1. Cross-lagged Panel Analysis predicting number of children and benevolent sexism while controlling for the effects of gender and hostile sexism (* $p < .001$).

Discussion

We conducted the first analyses for the associations between individuals' fertility rate and their endorsement of benevolent sexism across a two-year timespan. Supporting *Hypothesis 1*, a cross-sectional analysis indicated that people who had more children also tended to endorse benevolent sexism more strongly. We then conducted a structural equation analysis to explore the directionality of associations. Supporting *Hypothesis 2*, a greater number of children at one time point was associated with higher endorsement of benevolent sexism two years later. However, we did not identify any evidence that endorsement of benevolent sexism was related to having more children two years later, thus not supporting *Hypothesis 3*. This study is the first to find preliminary evidence that there is an association between individuals' fertility rate and their endorsement of benevolent sexism.

Our predictions were based on two theoretical accounts of the functions of benevolent sexism. First, a system justification account of benevolent sexism suggests that as individuals' experiences of inequality increase; and the more people become invested in unequal roles, the more they are motivated to justify such inequalities (Kay et al., 2009; Kay et al., 2007; Laurin et al., 2013). Our findings supported this account. People's greater number of children—an index of the extent to which people are experiencing gender inequalities (Baxter et al., 2015; Nitsche & Grunow, 2016; Treas & Tai, 2016)—was weakly related to endorsement of benevolent sexism two years later. Also consistent with this theory, no gender differences emerged for this association. That is, benevolent sexism could have a system-justifying function via idealizing the complementary nature of unequal divisions between men and women, while ensuring that their intimacy needs are met (Glick & Fiske, 1996, 1997; Hammond & Overall, 2015, 2017; Jackman, 1994). Additionally, benevolent sexism explicitly praises women for their unequal prioritization of caregiver and childrearing roles and flatters them into positively evaluating themselves as more suitable for subordinate roles, thereby reducing unpleasant feelings of unfairness (Glick & Fiske, 1996; Kay et al., 2009; Kay et al., 2007). Although justifying attitudes can palliate unpleasant feelings, rationalizing the status quo does not facilitate any positive change and hence it is not a constructive solution for inequalities (Becker & Wright, 2011; Jost & Hunyady, 2002). Instead, to move forward, aiming for institutional solutions and nurturing cultural norms could foster a social environment in which having children does not widen gender gaps but allow equal work-sharing behaviour for men and women (Grimshaw & Rubery, 2015; McDonald, 2013).

The second theoretical account we tested was that benevolent sexism functions as a mating strategy, encouraging men and women to adopt more traditional mate preferences and relationship roles (provider vs. caregiver), and thereby fostering conditions for reproductive outcomes (Eastwick et al., 2006; Gul & Kupfer, 2018; Wood & Eagly, 2012; Zentner & Eagly, 2015). Importantly, any lack of an association does not provide evidence against this hypothesis. Our tentative tests for this association sought any potential evidence for this direction of effect. There may also be different facets relevant to reproductive outcomes that must be considered in research. First, traditional mate preferences and relationship roles may be related to the *quality* rather than the *quantity* of reproductive outcomes. For example, stronger gender beliefs about the 'provider vs. caregiver' gender role divisions could result in men's greater financial investment; and women's greater emotional investment in a few children, rather than having more children. Second, we targeted a two-year timespan for the effects to manifest because previous fertility studies (Dunson et al., 2004; Liu et al., 2018) and research on sexism (Hammond et al., 2016) indicated that fertility changes and development of sexist attitudes are detectable within two years. It is possible though, that the links between individuals' sexist attitudes and their reproductive decisions unfold over longer periods of time. Thus, future research may investigate how benevolent sexism is related to the quality *and* quantity of reproductive outcomes over longer timespans.

Caveats and Future Research Directions

The purpose of this study was to tentatively test the association between individuals' fertility rate and their endorsement of benevolent sexism—a claim that has been long assumed but not investigated by previous research—making notable contributions to research on benevolent sexism. Theoretically, we mapped a comprehensive framework for how these associations may bidirectionally occur, highlighting that in the triangle of gender beliefs, gender inequality and parenthood there are reciprocal reinforcing relationships. Methodologically, we tested the associations between reproductive outcomes and gender beliefs by modelling time lags to assess the directionality of effects. Thus, our study provided important preliminary insights into the association between individuals' fertility rate and their endorsement of benevolent sexism, and points to possible directions for future research.

Due to the inherent methodological difficulties of conducting research on changes in individuals' fertility rate, data that can answer research questions on influential factors related to fertility decisions over time are scarce. The residual-change model in our study does not directly account for the time-lapse between measurement points and is likely only generalizable to the 2-year time interval that we selected for our study (Kuiper & Ryan,

2018). In the future, large datasets with multiple measurement waves over a decade or more could also utilize growth-curve modelling to assess the trajectories of endorsement of benevolent sexism and reproductive outcomes over time. Thus, we encourage researchers to collect and utilize different forms of data to build up a collection of indirect evidence for hypothesis-testing.

Collecting indirect evidence is particularly essential because prior research suggested that the relationship between gender beliefs and parenthood is context-dependent and should be shaped by individual-level experiences (e.g., availability of kin support in childcare) interacting with national-level structures that constrain individual choice (e.g., limited govermental childcare; McDonald, 2013; Schober & Scott, 2012). Our research utilized a sample from New Zealand and utilized "number of children" as a proxy for the multitude of inequalities that women experience in childcare roles (Ministry for Women, 2018) to assess the relationship between individuals' fertility rate and endorsement of benevolent sexism. Future research analysing indirect relationships may develop models that account for moderating effects of individual-level factors (e.g., high-income families who have access to extra childcare may experience less inequalities and thereby have lower tendency for justification).

Considering national-level factors, it is likely that the associations between individuals' fertility rate and their endorsement of benevolent sexism may be stronger in less egalitarian countries. System justification theory predicts that greater inequalities should prompt higher endorsement of justifying beliefs (Jost & Kay, 2005; Kay et al., 2007), indicating that more extreme child-rearing inequalities (e.g., providing only maternity leave and not paternity leave) would lead to greater endorsement of benevolent sexism. Conversely, the mating strategy hypothesis suggests that the more gender segregated societies are, the more that people seek partners who fit into the 'provider vs. caregiver' model facilitating having more children (Eagly & Wood, 1999; Gul & Kupfer, 2018; Zentner & Eagly, 2015). Accordingly, benevolent sexism might be linked more strongly with successful reproductive outcomes in more traditional societies because mating preferences are more strongly tied to family-oriented roles. Thus, future cross-cultural research could also examine the association between individuals' fertility rate and their endorsement of benevolent sexism as a function of national-level gender inequalities.

Conclusion

The present study examined the relationship between individuals' fertility rate and their endorsement of benevolent sexism. We hypothesized a bidirectional positive association based on two accounts of how gender inequalities connect with gender beliefs. We found that a greater number of children had a small and significant association with a greater endorsement of benevolent sexism two years later, but no evidence emerged linking individuals' endorsement of sexist beliefs to fertility rate over this timespan. Our study provides novel evidence that people's fertility rate is linked with their endorsement of benevolent sexism, and new but small evidence for a direction of this relationship. These results contribute to existing research on benevolent sexism by testing the assumption that traditional gender role promoting beliefs are associated with reproductive outcomes. By developing a comprehensive theoretical framework and testing previously assumed links between fertility and benevolent sexism, our study is preliminary instructive for future research investigating these relationships.

IV. COOPERATIVE GENDER BELIEFS ARE LINKED TO SUBJECTIVE WELLBEING

Study 2 examined two possible *functions* of cooperative gender beliefs by testing a proposed bidirectional link between individuals' endorsement of benevolent sexism and their fertility rate. Results provided suggestive evidence that cooperative gender beliefs serve justifying functions rather than lead to reproductive benefits within a relatively short timeframe. Thus, further elucidating the justifying functions of cooperative gender beliefs remained a central objective of my thesis. Study 1 differentiated *types* of cooperative gender beliefs including beliefs about the fairness of gender relations. In the study that follows, I further our understanding of cooperative gender beliefs by differentiating justifying *beliefs*—that serve to legitimize gender relations—and the *outcome* of justifying beliefs—which is evaluating inequality between partners as fair and just.

Research has indicated that people who experience more inequalities are not necessarily the ones who suffer the most from inequalities (Davis, 1959). For example, women who do more housework might not feel that their share of household labour is unfair (Hawkins, Marshall, & Meiners, 1995). One reason that may explain this contradiction is people's endorsement of cooperative gender beliefs (Thompson, 1991). Individuals' endorsement of cooperative gender beliefs (Jost et al., 2004), and individuals' embeddedness in contexts where people hold cooperative gender beliefs (Crosby, 1976), legitimize inequalities, mitigate people's perceptions of injustice, and thus positively relate to individuals' wellbeing. Ultimately, cooperative gender beliefs are linked to people's subjective wellbeing because they confer palliative psychological benefits.

However, we do not yet understand the multilevel mechanisms through which the palliative effects of justification unfold. As outlined in Table 1.1., in Study 3, I propose that the way people benefit from justifying inequalities is a complex mechanism that encompasses two parts (legitimization and palliative effects) and two levels (individual and societal). To test my model, I conduct a multilevel moderated mediation analysis using a large cross-national sample (ISSP Research Group, 2016). I assess the link between people's experiences of inequalities in their own household and their perceptions of unfairness in the household—which should be mitigated by individual-level and societal-level cooperative gender beliefs, which in turn, should predict people's satisfaction with family life. By testing my predictions, I assess the palliative function of justifying gender beliefs, which is theorized to confer subjective benefits despite experienced inequalities.

The following chapter is a manuscript in preparation for submission. Please do not cite without the permission from the authors.

Abstract

Gender beliefs that legitimize inequalities have been shown to predict people's subjective wellbeing. The ways and levels of which gender beliefs confer subjective benefits (i.e., *palliative effects*), however, is an unresolved issue. We combined two interrelated theoretical accounts—system justification theory and relative deprivation theory—to assess the mechanism through which gender beliefs make inequalities seem less unfair (i.e., *legitimization*) in people's households. To differentiate two parts (*legitimization* and *palliative effects*) of the process at two distinct levels (*individual* vs. *societal*), we used an unconflated multilevel moderated mediation model across 36 countries (N = 23,385). As hypothesized, the link between individuals' share of household labour and their perceptions of unfairness of the labour division was mitigated by both individual- and societal-level gender beliefs, which in turn, predicted women's, but not men's, subjective wellbeing. This study illustrates a process in which women gain subjective benefits by justifying inequalities.

Two levels of justification: The negative link between household inequality and family satisfaction is attenuated by individual and societal gender beliefs

Despite global gender gaps gradually closing, inequalities between men and women persist across the world (e.g., United Nations Development Programme, 2017; World Economic Forum, 2018). Structural inequalities, such as work-family polices promoting more maternal leave than paternal leave (e.g., Adema et al., 2015; Estes, 2011), have objectively damaging effects on men's and women's lives. For example, in Australia, women's financial disadvantages have been found to progressively grow throughout the lifespan, resulting in 90% of Australian women lacking adequate savings by retirement (ANZ, 2015).

Though harmful, gender inequalities do not always undermine people's subjective wellbeing. One critical factor in understanding the effect of inequalities on people's subjective wellbeing is individuals' perceptions of their circumstances as (un)fair (Crosby, 1976; Jost, 1995). The link between experiences of inequality and individuals' perceptions of fairness depends on belief systems embedded in cultural contexts. For example, women who hold stereotypical gender beliefs perceive unequal divisions of housework labour to be less unfair (e.g., Braun, Lewin-Epstein, Stier, & Baumgärtner, 2008; Hawkins et al., 1995; Thompson, 1991), and in turn, their lower perceptions of unfairness alleviate the negative impact of inequality on their subjective wellbeing (Gager, 1998; Lavee & Katz, 2002; Robinson & Spitze, 1992).

Though previous research has found that perceptions of inequality influence the subjective effects of inequality, the mechanisms that underpin the perceived justice of gender inequality remain unclear. Two psychological theories focus on different ways that gender beliefs relate to perceived inequality. First, system justification theory suggests that *individuals* are personally motivated to rationalise the inequalities they experience, such as by adopting beliefs that rationalize feelings of injustice and thereby alleviating the associated negative effects on wellbeing (Jost, 1995; Jost & Banaji, 1994; Jost & Hunyady, 2002). Second, relative deprivation theory suggests that individuals' perceptions of unfairness derive from their social norms and comparisons to similar others, meaning that living in a *context* of traditional gender beliefs will reduce feelings of injustice and its associated negative effects (Crosby, 1976; Davis, 1959). Thus, from a system justification perspective, individuals who hold stereotypical gender beliefs should be more likely to justify gender inequalities regardless of whether their society holds these beliefs or not. From a relative deprivation perspective, individuals living in a society of high stereotypical gender beliefs should be

more likely to justify gender inequalities regardless of their own personal beliefs. Each theory focuses on justification, however the ways justification mechanisms operate have yet to be resolved.

Here, we advance prior research on the justification of structural gender inequalities by unconflating two parts *and* two levels of justification simultaneously. Specifically, we disentangle the theoretical parts of (1) the beliefs that legitimize inequality and (2) how inequality links to perceptions of unfairness, *and* break down the (1) individual-level processes from (2) societal-level processes. We test a multilevel moderated mediation model across 36 countries using data from the International Social Survey Program (ISSP Research Group, 2016) in 2012 (N = 23,385), to predict how gender beliefs at two levels of measurement predict people's perceptions of unfairness of their household division of labour, which in turn, predict their subjective wellbeing.

The two parts and two levels of how people benefit from justifying inequalities

We propose that the way people benefit from justifying gender inequalities is a complex process that encompasses two different parts and two levels. First, people's experiences of inequalities are associated with perceiving their circumstances as unfair. However, this link depends on the extent to which people endorse legitimizing beliefs. As displayed in Figure 4.1, people who endorse beliefs that legitimize their experiences tend to perceive their circumstances as relatively less unfair. In the second part of the process, perceiving their circumstances as less unfair confers palliative benefits—the negative effects of inequalities on individuals' subjective wellbeing are alleviated (see *Palliative Effects* in Figure 4.1).

The conceptual model displayed in Figure 4.1 is informed by system justification theory (Jost & Banaji, 1994) and relative deprivation theory (Crosby, 1976), two distinct but interrelated theoretical accounts on legitimizing beliefs and perceptions of fairness. In the current study, we integrate these two theories to provide a comprehensive framework for explaining the links between individuals' experiences of inequalities and their subjective wellbeing within their cultural context. Integration of these theories provides the particular advantage of accounting for the parts of *legitimization* and *palliative effects* at two distinct levels: System justification theory explains how personal beliefs legitimize inequalities, while relative deprivation theory highlights how cultural beliefs rationalize inequalities. In the following section, we describe these theories, and the accompanying processes, in more detail.

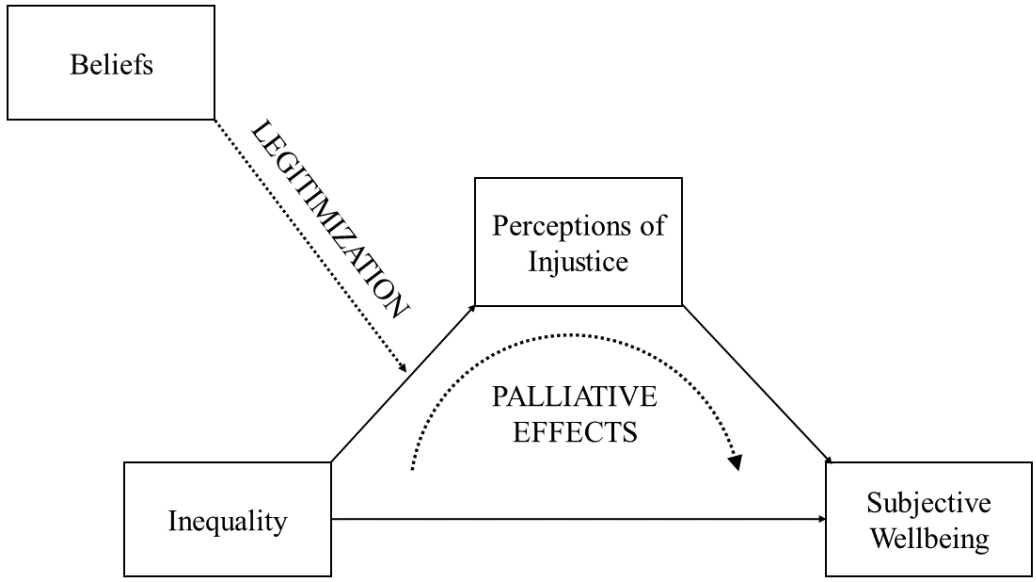

Figure 4.1. Conceptual model for the mechanism of justification. Gender beliefs legitimize inequalities and thereby attenuate perceived unfairness which in turn relates to subjective wellbeing.

Individual-Level Beliefs and Perceptions of Unfairness

System justification theory states that the more people are exposed to inequalities that they cannot endure, the more they are motivated to establish a sense of justness by endorsing beliefs legitimize persistent inequalities (Jost, 2019; Jost & Banaji, 1994; Jost et al., 2004). Beliefs that are particularly effective at rationalizing inequality tend to focus on subjectively positive ideas and establish a sense that social relations are fair and built on merit (Jost & Kay, 2005; Kay & Jost, 2003; Kay et al., 2007). In the current research we focus on gender inequalities and traditional gender beliefs. These gender beliefs tend to describe men and women as having traits and skills that match the respective status of their roles in society, such as men being competent workers and women being communal caregivers (Eagly & Steffen, 1984; Fiske et al., 2002; Wood & Eagly, 2012). By emphasizing the complementary nature of these qualities and roles, the beliefs function to affirm perceptions that gender relations are fair (Glick & Fiske, 1996; Jackman, 1994; Jost & Kay, 2005; Kay et al., 2007). In turn, perceptions of fairness are theorized to reduce tensions between groups, foster

acceptance of the status quo, and promote cooperation (Jackman, 1994; Jost & Hunyady, 2005).

A large literature supports the idea that individuals who endorse justifying gender beliefs perceive inequalities as less unfair (e.g., Braun et al., 2008; Gager, 1998; Greenstein, 1996; Lavee & Katz, 2002; Nakamura & Akiyoshi, 2015; Thompson, 1991). For example, Braun et al. (2008) found that individuals' endorsement of traditional gender beliefs (e.g., "A job is alright, but what most women really want is a home and children") were a stronger predictor of perceived fairness of the division of housework than more objective factors such as individuals' available time and their financial dependence on their partner. Thus, endorsing gender beliefs that describe cooperative and complementary roles for men and women legitimize inequalities. Legitimization of inequalities is one part of the justifying process in which personal beliefs attenuate the association between an individual experiencing inequality and perceiving their circumstances as unfair.

The second part of the justifying process is the unfolding palliative effects of justification. Maintaining relatively positive attitudes towards current and inevitable inequalities buffers individuals from the mental distress that is associated with their negative experiences (Friesen, Laurin, Shepherd, Gaucher, & Kay, 2018; Jost & Hunyady, 2002; Jost et al., 2008; Laurin et al., 2010; Wakslak et al., 2007). Accordingly, endorsing system justifying beliefs is linked with higher life satisfaction (Napier & Jost, 2008; Napier et al., 2010), and with different aspects of subjective wellbeing (e.g., life satisfaction, personal wellbeing, and psychological distress; Bahamondes, Sibley, & Osborne, 2019). Justification reduces emotional distress in different ways for the advantaged and disadvantaged groups (e.g., reducing guilt for the advantaged vs. reducing frustration for the disadvantaged; Jost et al., 2008). For example, endorsement of sexist beliefs is associated with greater life satisfaction through perceiving gender relations as fair for both men and women, but these effects were stronger for women and were fully mediated through justification (Hammond & Sibley, 2011). Thus, justifying inequalities confers benefits for individuals, especially for women. In sum, personal beliefs that justify gender inequalities are associated with a false sense that the gender system is fair which—by attenuating perceptions of injustice—diminishes the detrimental effects of inequality on wellbeing.

Societal-level Beliefs and Perceptions of Unfairness

Relative deprivation theory states that individuals' sense of injustice is based on comparing themselves to some standard of reference (Crosby, 1976; Davis, 1959). To feel

unjustly deprived, individuals must recognize that similar others have access to a desired thing *and* the desired thing must be feasible for them to obtain (Davis, 1959). Thus, the comparative reference depends on the cultural context, and for gender, can determine whether women and men make within- or between-gender comparisons (Crosby, 1982; Thompson, 1991). For example, it is more unrealistic for women to desire a career *and* a stay-at-home husband when neither cultural norms nor social policies support such a family structure, and hence there is no comparative basis under which women should feel unjustly deprived. Indeed, women who are conditioned to believe that men and women have gendered responsibilities and roles are likely to compare themselves to other *women*; while women who believe in gender equality are more likely to make self-other comparisons across gender (Greenstein, 2009; Risman, 2004). Thus, the social context influences individuals' choice of reference against which they evaluate the fairness of their situation.

Indeed, research supports the idea that country-specific benchmarks of gender beliefs influence the extent to which people perceive inequalities as unfair. Women surrounded by traditional gender beliefs are accustomed to skewed gender role standards, and accordingly, they are more likely to regard an unequal division of labour as more legitimate and fair when their experiences reflect the normative experience of other women in their country (Braun et al., 2008; Jansen, Weber, Kraaykamp, & Verbakel, 2016). Thus, individuals' embeddedness within a context of legitimizing beliefs should also attenuate the link between experiences of inequality and perceptions of unfairness. Individuals who are surrounded by people who hold more traditional gender beliefs should evaluate their situation as less unfair than those who live in contexts with generally more egalitarian beliefs, and importantly, this should occur regardless of the personal beliefs endorsed by the individual.

Relative deprivation theory also expects that the link between inequality and subjective wellbeing is mediated by perceptions of fairness. People who are objectively more deprived are not necessarily the ones who suffer the most (Davis, 1959). Indeed, the uneven divisions of household labour are more strongly associated with women's perceptions of unfairness in more *egalitarian* countries (Jansen et al., 2016), and in turn, with lower levels of satisfaction with family life (Greenstein, 2009). In sum, relative deprivation theory suggests that individuals' sense of unfairness about gender inequalities is driven by their choice of comparative reference—which depends on the extent to which individuals are surrounded by more traditional gender beliefs—which in turn contributes to their subjective wellbeing.

Unconflating the Justification Process

Taken together, system justification theory and relative deprivation theory are two compatible accounts of justification processes. The two theories differ in their focus. System justification theory focuses on individuals' endorsement of legitimizing gender beliefs whereas relative deprivation theory focuses on individuals' embeddedness in a context of legitimizing gender beliefs. Here, we apply both theories to understand how women's experiences of gender inequalities relate to their subjective wellbeing. We focus on two parts (*legitimization* and *palliative effects*) while accounting for beliefs across two levels (*individual beliefs* and *societal beliefs*). At the individual level, endorsing personal beliefs that legitimize inequalities attenuates perceived injustice, which in turn, fosters higher subjective wellbeing. Simultaneously, when individuals' experiences of inequality are embedded in the broader cultural context in which inequality appears to be the norm within gender structures, individuals are less likely to perceive inequality as unfair in the first place. Thus, both the gender beliefs held by an individual *and* the gender beliefs held in an individual's country should reduce the extent to which that individual's experiences of gender inequality undermine their subjective wellbeing, via attenuating the extent to which individuals perceive that inequality as being "unfair".

Prior research on individuals' justification of inequalities has tended to conflate different parts and/or levels of the process. Research that measured justification at both the individual and country-level often conceptualized perceptions of unfairness as either an end (e.g., unequal housework divisions affecting perceptions of unfairness; Braun et al., 2008) or as a means to an end (e.g., perceptions of unfairness of the housework division affecting family satisfaction; Greenstein, 2009) and dismissed the process of how the different parts are linked together. Other studies distinguished the sequential parts of legitimizing beliefs and palliative effects, but conflated legitimizing beliefs with perceptions of fairness and have been restricted to individual-level effects. For example, Bahamondes et al. (2019) demonstrated that New Zealand women's endorsement of justifying beliefs (i.e., beliefs that relations between women and men are fair) attenuated the effects of perceived group-based discrimination and predicted relatively higher wellbeing. However, these findings could not distinguish women's *personal* endorsement of beliefs from the normative beliefs that people hold in New Zealand society, nor could they differentiate between the valence and the outcome of legitimizing beliefs.

Current Research

We tested a model of justifying inequality derived from two theories on justifying processes. In the current research, we drew from a large cross-national sample (N = 23,385) from the 2012 wave of the International Social Survey Program (ISSP). We tested a model in which individuals' relative share of housework to their partner's share (*experiences of inequality*), predicted perceptions of unfairness of the housework division of labour (*perceptions of injustice*), and in turn predicted their family satisfaction (*subjective wellbeing*), depending on the extent to which people endorsed or were embedded in a context of traditional gender beliefs. The context of household inequalities was particularly useful for examining the justification process because these inequalities are widespread across the world and are one central index of societal gender inequalities (Fuwa, 2004; Treas, 2010), but are also one determinant of relationship satisfaction (Forste & Fox, 2012; Greenstein, 2009; Lavee & Katz, 2002).

Our predicted model is depicted in Figure 4.2. We specified a multigroup, unconflated multilevel model. The model is *multigroup* because we estimated parameters separately, but simultaneously, for women and men. There are inherent measurement differences due to holding advantaged and disadvantaged societal positions (e.g., women's share of housework is much greater than men's share of housework and women are targets of greater gender prejudice than men; Jost & Kay, 2005; Treas, 2010), and prior work indicated that system-justifying processes are stronger for women than for men (e.g., Bahamondes et al., 2019; Hammond & Sibley, 2011). Thus, based on methodological considerations (i.e., limited statistical power for three-way interactions), here, women and men were treated as different groups. The model is *multilevel* because it accounts for variance at the individual level and at the country level. The model is *unconflated* because it distinguishes measurement of gender beliefs at these two different levels, allowing us to examine variance in individuals' beliefs (i.e., holding high or low beliefs relative to other individuals in the world) *and* variance in country beliefs (i.e., whether individuals live in a country with high or low beliefs relative to other countries in the world), within a single comprehensive model.

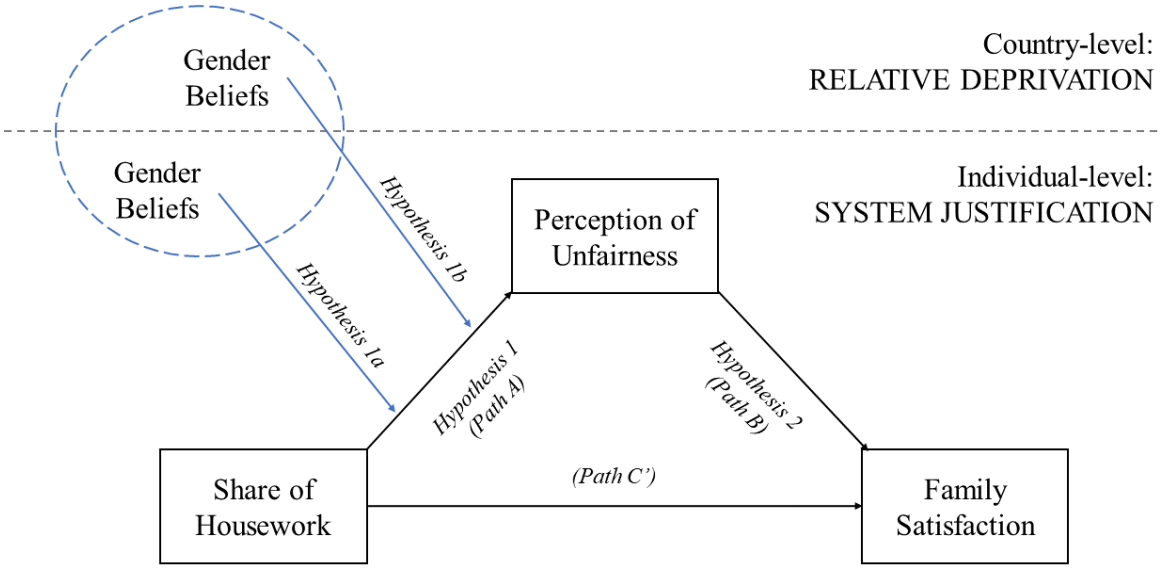

Figure 4.2. The hypothesized unconflated multilevel moderated mediation model. This model predicts that the relationship between individuals' relative share of housework within family and individuals' family satisfaction will be mediated by individuals' perceived unfairness of the housework division between partners. The association between inequality and perceptions of unfairness will be attenuated by individual-level gender beliefs and by country-level gender beliefs.

We hypothesized that people who have a greater share of housework will perceive their household division of labour as more unfair (*Hypothesis 1;* Figure 4.1 Path A). However, we expected that this link would be moderated by gender beliefs. Based on system justification theory, having more traditional (vs. more egalitarian) gender beliefs relative to others in the world (regardless of the absolute level of gender beliefs held in country) will diminish the positive relationship between share of housework and perceptions of unfairness for women, while for men, the opposite effect would occur (*Hypothesis 1a*). Based on relative deprivation theory, we predicted that being in a country with more traditional (vs. more egalitarian) gender beliefs (regardless of individuals' gender beliefs) will diminish the positive relationship between share of housework and perceptions of unfairness for women, while for men, the opposite effect would occur (*Hypothesis 1b*). We hypothesized that individuals' perceptions of unfairness would predict lower family satisfaction (*Hypothesis 2;* Path B). Accordingly, we predicted that a greater share of housework would indirectly predict

family satisfaction, mediated by perceptions of unfairness (*Hypothesis 3*). Finally, we investigated three specific research questions. We tested the extent to which individual-level effects were relatively stronger or weaker than country-level effects (*RQ1*), tested for potential gender differences in the predicted moderated mediation paths (*RQ2*), and tested for robustness and any differences across time by replicating our analysis at another time point from the ISSP database (*RQ3*).

Method

Data Source

The present research utilized data from Wave 2012 of the International Social Survey Program (ISSP). To conduct our analyses, we selected data that contained variables for the proposed model across countries. All together, we compared four cross-national databases and 16 waves of data collection to select data with the most suitable measures for our purposes. See supplementary materials for data comparisons from different sources and final data selection (https://osf.io/sbe63/?view_only=3c5b5e077aae45e6ac153192a31144d0). In total, the original ISSP sample consisted of 61,754 individuals nested in 43 countries. As our hypotheses specifically involved questions regarding individuals' share of work relative to that of their partner, our inclusion criteria specified that participants (1) cohabited with their romantic partner, and (2) provided full responses to the measures of interest. Our total sample consisted of 23,385 individuals nested within 36 countries. Individual-level descriptive statistics by gender are displayed in Table 4.1; individual-level descriptive statistics of the main variables of interest by country and gender are displayed in Table S1; and country-level descriptive statistics including covariates are displayed in Table S2 in Section A in the supplementary materials.

Measures

Egalitarian vs. Traditional Gender Beliefs. Participants completed seven items for the measure of gender beliefs: (1) "A working mother can establish just as warm and secure a relationship with her children as a mother who does not work"; (2) "A preschool child is likely to suffer if his or her mother works"; (3) "All in all, family life suffers when the woman has a fulltime job"; (4) "A job is all right, but what most women really want is a home and children"; (5) "Being a housewife is just as fulfilling as working for pay'; (6) 'Both the man and woman should contribute to the household income"; (7) "A man's job is to earn money; a woman's job is to look after the home and family" (1 = *Strongly agree* to 5 =

Strongly disagree). Items were averaged so that higher scores indicated more *traditional* gender beliefs at the individual level (Cronbach's α = .73) *and* aggregated across individuals within countries to establish an index of the normative beliefs held in each country. Both variables were grand-mean centred and used in the multilevel analyses in the following ways: Individuals' gender beliefs represent the variance in each individual's beliefs relative to other people in the world, while aggregated gender beliefs represent the variance in country-level gender beliefs relative to other countries in the world.

Share of Housework. Following prior methods (e.g., Greenstein, 2009; Jansen et al., 2016), we constructed a relative share of housework measure based on two questions: "On average, how many hours per week do you personally spend on household work, not including childcare and leisure time activities?" and a parallel question about participants' perceptions of the share of housework completed by the respondent's partner. The hours of respondent's household labour were divided by the total hours of household labour done by the respondent and their perceptions of their partner's share of housework. Higher numbers indicated a higher proportion of the share of housework.

Perceptions of Unfairness. Our hypothesized mediator variable was assessed by the following question: "Which of the following best applies to the sharing of household work between you and your spouse/partner?". Our unfairness scale ranged from 1 to 5 (1 = "I do much less than my fair share of the household work", 2 = "I do a bit less than my fair share of the household work", 3 = "I do roughly my fair share of the household work", 4 = "I do a bit more than my fair share of the household work", and 5 = "I do much more than my fair share of the household work"). Prior studies used this measure as a nominal variable (e.g., Braun et al., 2008; Jansen et al., 2016), however, we used it as a 5-point continuous scale to avoid problems with dichotomizing continuous variables (see Streiner, 2002).

Family Satisfaction. One item was used to measure satisfaction with family life. Participants completed the item, "All things considered, how satisfied are you with your family life?" (1 = *Completely dissatisfied* to 7 = *Completely satisfied*).

Covariates. Following our primary analyses, we conducted a model including covariates that may explain differences in the hypothesized effects. Based on prior practice, the following covariates were included at the individual level. *Age* ranged from 16 years old to 95+ years old. *Education* was measured on a 6-point scale (0 = no formal education; 5 = tertiary education). *Share of income* was measured by a one-item 7-point scale to assess respondents' level of income relative to their partner (1 = participant has no income at all, 7 = participant's partner has no income at all). We controlled for *household size* by measuring the

number of persons that lived in participants' household (ranging between 1-23). To account for time availability constraints, we included *financial work* as a covariate that measured the number of weekly hours the respondent allocated to paid work (ranging between 0-95+ hours per week). Similar to our main predictor variable, respondent's *share of financial work* was calculated by dividing respondent's financial work hours by the total of respondents work hours and their partner's work hours. Finally, we included individuals' absolute time allocated to *housework* (ranging between 0-95+ hours per week) at the individual-level. Following previous practice that distinguished cultural vs. structural country-level factors that may influence individual-level outcomes (Jansen et al., 2016), we included an index of *female labour force participation* as a country-level covariate by aggregating women's reported weekly hours allocated to paid work. For a full description of these measures, see Section B in the online supplementary materials, and individual level descriptive statistics for covariates in Section A.

Results

Preliminary Analysis

We first examined descriptive statistics for women and men across countries. There were large gender differences in some of the variables of interest. For instance, women's share of housework (M = .72, SD = .20) was larger than men's (M = .36, SD = .21), and this gender gap was statistically significant and very large (t (23,383) = 136.661, p < .001, d = 1.756). These results further supported our rationale for conducting our model (see Figure 4.2) separately but simultaneously for women and men. We used MPlus 6.12 (Muthen & Muthen, 2017) for the analyses.

Examining the correlations between study variables (see Table 4.1) indicated statistically significant relationships between our main variables in theoretically consistent ways for women. For men, we observed statistically significant relationships between share of housework and perceptions of unfairness, share of housework and gender beliefs, and gender beliefs and family satisfaction but not between perceptions of unfairness and family satisfaction. However, the correlations presented here reflected conflated effects where between-country variability in the individual-level relationships was ignored. As we expected variation in the outcome (i.e., family satisfaction) to occur at multiple levels, we ran a multilevel model to properly account for dependencies between people within countries and to "unconflate" individual-level and country-level variance in gender beliefs.

Table 4.1 *Individual-level descriptive statistics and correlations split by gender*

	Women (n = 12,933)		*Men (n = 10,452)*					
	M	*SD*	*M*	*SD*	*1.*	*2.*	*3.*	*4.*
1. Gender Beliefs [a]	2.67	0.76	2.76	0.72	-	.114*	.052*	-.079*
2. Share of housework [b]	0.72	0.20	0.36	0.21	-.099*	-	.334*	-.088*
3. Perception of Unfairness [c]	3.83	0.97	2.64	0.99	.001	.405*	-	-.064*
4. Family Satisfaction [d]	5.61	1.02	5.66	0.97	-.080*	-.013	-.015	-

Note. [a] Gender beliefs ranged from 1 (highly egalitarian) to 5 (highly traditional); [b] Share of housework ranged between 0-1 where higher values represented higher share for participant vs. their partner; [c] Unfairness ranged between 1-5 where 3 represented a fair share of housework between partners and higher values represented doing much more housework for participant than their fair share; [d] Family satisfaction ranged from 1 (completely dissatisfied) to 7 (completely satisfied). Correlations above the diagonal are for women, correlations below diagonal are for men. * $p < .001$.

In this model, the predictor, mediator and outcome variables were modelled at the individual-level, with an unconflated moderator variable that operated at both the individual-level and country-level (Zigler & Ye, 2019). The intercept was allowed to vary around the grand mean across countries while the slopes were fixed, which controlled for average differences across countries for each variable. That is, the intercept can be interpreted as the predicted family satisfaction for a person with average characteristics in a country with the average level of gender beliefs across countries. We grand-mean centred all individual-level and country-level measures which introduced country-level differences into the estimates at the individual-level (Nezlek, 2008). That is, any differences in country-level gender beliefs between countries influenced the within country differences in the relationships between share of housework and family satisfaction through perceptions of unfairness.

Individual-level equation:

$$Y_{ij} = \beta_{0j} + \beta_{1j}SHW_{ij} + \beta_{2j}GB_{ij} + \beta_{3j}SHW_{ij}\times GB_{ij} + \varepsilon_{ij} \quad (1)$$

Where Y_{ij}, the perceptions of unfairness of person i in country j, was the function of (β_{0j}) the individual level intercept for country j; $\beta_{1j}SHW_{ij}$ was the slope for individual's share of housework; $\beta_{2j}GB_{ij}$ was the slope for individuals' gender beliefs relative to others in the world; $\beta_{3j}SHW_{ij}\times GB_{ij}$ was the slope for the interaction between share of housework and gender beliefs; and ε_{ij} was the random error for person i in country j that was assumed to be normally distributed with a mean of zero and variance σ^2. This equation stated that individuals' perceptions of unfairness can be explained as a function of individuals' share of housework, gender beliefs, and the interaction between individuals' share of housework and their gender beliefs.

Country-level equation:

$$\begin{aligned} \beta_{0j} &= \gamma_{00} + \gamma_{01}GB_{aggj} + \mu_{0j} \\ \beta_{1j} &= \gamma_{10} + \gamma_{11}GB_{aggj} \\ \beta_{2j} &= \gamma_{20} \\ \beta_{3j} &= \gamma_{30} \end{aligned} \quad (2)$$

Where β_{0j} was the country-level intercept; γ_{00} was the grand mean of country-level intercepts; $\gamma_{01}GB_{aggj}$ was the effect of aggregated gender beliefs in country j on the model intercept; and μ_{0j} was the error term that was assumed to be normally distributed with a mean of zero and variance of $\tau_{00.}$ That is, we allowed the intercepts to randomly vary across countries. β_{1j} was the regression coefficient for country-level share of housework that was a function of (γ_{10}) the grand mean of regression slopes across countries for the share of housework slope; $\gamma_{11}GB_{aggj}$ was the cross-level interaction effect in which the relationship at

the individual-level varied as a function of the country-level gender beliefs. This equation stated that the relation between individuals' perceptions of unfairness and share of housework may be magnified (or diminished) for countries which were higher (or lower) in gender beliefs compared to other countries. β_{2j} and β_{3j} were the regression coefficients for gender beliefs and for the interaction term of share of housework and gender beliefs respectively.

The Justification Process for Women

The first part of our multigroup multilevel model tested the extent to which the link between women's share of housework and their family satisfaction was mediated by women's perceptions of unfairness, moderated by their gender beliefs. Results are displayed in Table 4.2 and Figure 4.3. The first requirement for mediation is that share of housework predicts perceptions of unfairness (*Path A*). As expected, women's greater share of housework was positively associated with their perceptions of unfairness (see Path A for women in Table 4.4). This link was weakly moderated by their endorsement of gender beliefs at the *individual level*. Analyses of simple slopes indicated that the association between share of housework and perceptions of unfairness was stronger for women who held more egalitarian (1 SD below the mean) vs. more traditional (1 SD above the mean) beliefs relative to other women in the world (Egalitarian *slope* = 1.952, *se* = 0.058, $t = 33.825$, $p < .001$; Traditional *slope* = 1.434, *se* = 0.072, $t = 19.786$, $p < .001$).

Table 4.2 *Multi-group multilevel moderated mediation model: Comparing women and men across countries in 2012 where individual-level and country-level gender beliefs moderate the negative relationship between individuals' share of housework and individual's family satisfaction mediated by individual-level perception of unfairness with the division of housework.*

Year: 2012		**Women**						**Men**					
						95% CI						95% CI	
		B	*SE*	*t*	*p*	*Lo.*	*Hi.*	*B*	*SE*	*t*	*p*	*Lo.*	*Hi.*
Path A predicting Perceptions of Unfairness [a]													
Individual-level	Share of housework [b]	1.693	0.034	49.377	<.001*	1.626	1.760	1.977	0.046	43.151	<.001*	1.887	2.067
	Gender beliefs [c] (Individual)	0.094	0.020	4.683	<.001*	0.055	0.133	-0.023	0.025	-0.942	.346	-0.072	0.025
	Gender beliefs (Individual) × Share of housework	-0.342	0.074	-4.639	<.001*	-0.486	-0.197	-0.151	0.069	-2.183	.029*	-0.287	-0.015
Country-level	Gender beliefs (Aggregated)	0.152	0.340	0.447	.655	-0.515	0.819	0.221	0.235	0.939	.348	-0.240	0.682
Cross-level													
	Gender beliefs (Aggregated) × Share of housework	-1.499	0.133	-11.26	<.001*	-1.760	-1.238	-1.378	0.216	-6.388	<.001*	-1.800	-0.955
Path B and C' predicting Family Satisfaction													
Individual-level	Intercept	5.711	0.099	57.428	<.001*	5.516	5.906	5.711	0.079	72.405	<.001*	5.556	5.865
	Unfairness	-0.074	0.012	-6.228	<.001*	-0.097	-0.051	-0.002	0.014	-0.120	.904	-0.029	0.026
	Share of housework	-0.237	0.072	-3.284	.001*	-0.378	-0.096	-0.142	0.092	-1.544	.123	-0.321	0.038
	Gender beliefs (Individual)	-0.110	0.030	-3.675	<.001*	-0.169	-0.051	-0.099	0.014	-6.879	<.001*	-0.127	-0.071
	Gender beliefs (Individual) × Share of housework	0.256	0.080	3.183	.001*	0.098	0.413	-0.142	0.081	-1.748	.080	-0.300	0.017
Country-level	Gender beliefs (Aggregated)	-0.120	0.346	-0.347	.728	-0.799	0.559	-0.029	0.324	-0.089	.929	-0.665	0.607
Cross-level													
	Gender beliefs (Aggregated) × Share of housework	0.208	0.205	1.015	.310	-0.194	0.609	0.416	0.256	1.623	.105	-0.086	0.919

Note. [a] Unfairness ranged between 1-5 where 3 represented a fair share of housework between partners and higher values represented doing much more housework for participant than their fair share; [b] Share of housework ranged between 0-1 where higher values represented higher share for participant vs. their partner; [c] Gender beliefs ranged from 1 (highly egalitarian) to 5 (highly traditional). * $p < .05$.

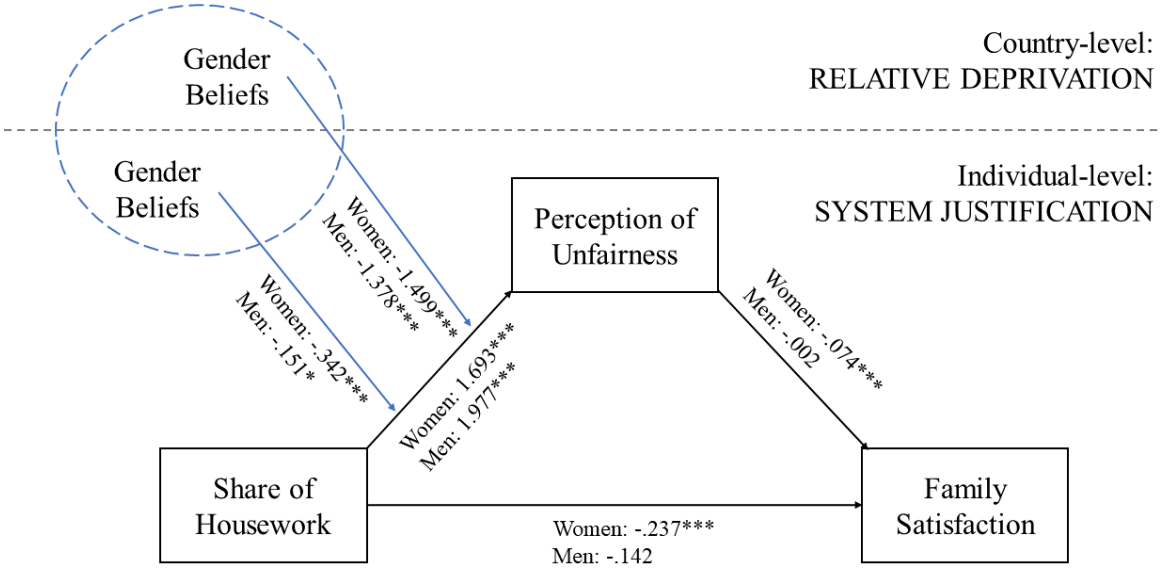

Figure 4.3. Unconflated multigroup multilevel moderated mediation analysis in which the association between a greater share of housework and higher perceptions of unfairness was attenuated by individual-level (*Hypothesis 1a*) and country-level (*Hypothesis 1b*) more traditional gender beliefs. In turn, perceptions of unfairness were linked to lower family satisfaction for women but not for men (*Hypothesis 2*). Additionally, share of housework had a direct negative relationship with family satisfaction for women but not for men.

The positive relationship between individuals' share of housework and perceptions of unfairness was also moderated by *country-level* gender beliefs (See Figure 4.3). Analyses of simple slopes indicated that the association between share of housework and perceptions of unfairness was stronger for women who were in more egalitarian (vs. more traditional) countries (Egalitarian *slope* = 2.142, *se* = 0.056, $t = 38.022$, $p < .001$; Traditional *slope* = 1.244, *se* = 0.049, $t = 25.655$, $p < .001$). Thus, women's rejection of traditional gender beliefs magnified the association between women's share of housework and perceptions of unfairness at both the *individual-level* and the *country-level*: Holding more egalitarian gender beliefs than other women in the world (regardless of the absolute level of gender beliefs held in country) *or* being in a country that had more egalitarian gender beliefs (regardless of individual women's gender beliefs) was linked with heightened perceptions of an imbalance in housework as being unfair.

The next requirement of the hypothesised mediation model was to test whether women's perceptions of unfairness significantly predicted family satisfaction (see *Path B* for women in Table 4.2). As expected, greater perceptions of unfairness were linked with lower family satisfaction. Accordingly, it was plausible that perceptions of unfairness mediated the relationship between share of housework and family satisfaction. We tested this by estimating indirect effects of share of housework on family satisfaction via perceptions of unfairness. Because the link between share of housework and perceptions of unfairness was moderated by (1) *individual-level* gender beliefs, and (2) *country-level* gender beliefs, we estimated four potential indirect effects at low (1 SD below the mean = more egalitarian) and high (1 SD above the mean = more traditional) levels of gender beliefs. Significant indirect effects emerged in all cases (See Table 4.3), indicating that women's higher share of housework was negatively associated with their family satisfaction because they viewed this division as more unfair. However, for women who held more traditional gender beliefs or were in countries with more traditional gender beliefs, these indirect effects were relatively weaker. This finding indicated that traditional gender beliefs attenuated the extent to which perceptions of unfairness mediated the link between women's share of housework and their family satisfaction. Thus, results from the model for women supported all our hypotheses.

Table 4.3 *Estimates of indirect effects for the association between share of housework and family satisfaction mediated by perception of unfairness for women and for men, moderated by individuals' gender beliefs and by country-level gender beliefs.*

	Women				**Men**				**Gender Difference**			
	Estimate	*SE*	*t*	*p*	*Estimate*	*SE*	*t*	*p*	*Estimate*	*SE*	*t*	*p*
Individual-level low gender beliefs	-0.144	0.025	-5.804	<.001*	-0.004	0.029	-0.120	.904	-0.141	0.038	-3.666	<.001*
Individual-level high gender beliefs	-0.106	0.016	-6.508	<.001*	-0.003	0.026	-0.120	.904	-0.103	0.031	-3.334	.001*
Country-level low gender beliefs	-0.158	0.027	-5.929	<.001*	-0.004	0.034	-0.120	.904	-0.154	0.043	-3.600	<.001*
Country-level high gender beliefs	-0.092	0.014	-6.563	<.001*	-0.003	0.022	-0.120	.904	-0.089	0.026	-3.431	.001*

Note. Low gender beliefs are 1 SD below the mean indicating more egalitarian beliefs; high gender beliefs are 1 SD above the mean indicating more traditional beliefs. * $p < .05$.

Finally, one additional effect in the model emerged in the direct association between share of housework and family satisfaction (See *Path C'*; Figure 4.3). This direct association was also moderated by women's *individual-level* gender beliefs but not by *country-level* gender beliefs (See *Path B and C'* for women in Table 4.2). A simple slope analysis revealed that the negative relationship was stronger for women who held more egalitarian gender beliefs relative to other people in the world (1 SD below the mean; *slope* = -0.431, *se* = 0.097, t = -4.442, $p < .001$) rather than having more traditional gender beliefs relative to other people in the world (1 SD above the mean; *slope* = -0.043, *se* = 0.092, t = -0.468, $p = .640$). Thus, women's higher share of housework was negatively associated with their family satisfaction even after controlling for women's perceptions of unfairness, and this link was stronger for women who held more egalitarian (vs. more traditional) gender beliefs than other people in the world (regardless of the absolute level of gender beliefs held in country).

In sum, comparing the effects of inequalities in the division of labour on women's family satisfaction across women with more egalitarian vs. more traditional beliefs, results indicated that for women who held more *egalitarian* beliefs the *direct* effect of inequalities in the division of labour on family satisfaction was stronger than the *indirect* effect as compared to women who held more *traditional* beliefs.

The Justification Process for Men

The multigroup model simultaneously predicted identical effects for men. Results are presented in Table 4.2 and Figure 4.3. First, testing Path A of the potential mediation model, men's share of housework was positively associated with men's perceptions of unfairness. This link was weakly moderated by men's endorsement of gender beliefs. Analysis of simple slopes indicated that this link was stronger for men who held more egalitarian (vs. more traditional) gender beliefs relative to other people in the world (Egalitarian *slope* = 2.085, *se* = 0.066, t = 31.735, $p < .001$; Traditional *slope* = 1.868, *se* = 0.069, t = 26.910, $p < .001$). Furthermore, the positive link between individual men's share of housework and their perceptions of unfairness was also moderated by *country-level* gender beliefs. This association was stronger in more egalitarian countries than in more traditional countries (Egalitarian *slope* = 2.390, *se* = 0.077, t = 31.185, $p < .001$; Traditional *slope* = 1.563, *se* = 0.082, t = 19.090, $p < .001$). That is, men's rejection of traditional gender beliefs magnified the association between men's share of housework and perceptions of unfairness at both the *individual-level* and the *country-level*: Holding more egalitarian gender beliefs than other people in the world (regardless of the absolute level of gender beliefs held in country) *or*

being in a country that had more egalitarian gender beliefs (regardless of individual men's gender beliefs) was linked with heightened perceptions of an imbalance in housework as being unfair, in such, that men with more egalitarian beliefs or men in more egalitarian countries perceived their lower share of housework as more unfair to their partner than men with more traditional beliefs or men in countries with more traditional beliefs. Second, for men, the association between perceived unfairness and family satisfaction was not statistically significant (*Path B*). Thus, there was no evidence that men's perceived unfairness of their share of housework related to their family satisfaction, and so this was not a potential mediator for men. In sum, results from the model for men only supported *Hypotheses 1a* and *1b*, but not *Hypotheses 2* and *3*.

To further gain confirmation for our hypothesized model we replicated our analysis including statistical covariates. Descriptive statistics for covariates are presented in Table S3 and results are presented in Table S4 and Table S5 in Section A in the online supplementary materials. Results indicated that all our hypothesized links were replicated, and the effects remained statistically significant.

Differences across Groups, Levels and Time

Differences across genders. In all cases reported above, the indirect effects for women were significantly different from zero, however, it was possible that they were not different to men. Thus, we tested for potential gender differences in the indirect paths. Results showed statistically significant differences between women and men indicating that all the conditional indirect pathways were stronger for women than for men (See Table 4.3).

Differences across levels. We also compared the indirect paths for women. Results indicated that differences between *individual-level* vs. *cross-level* indirect paths at low (more egalitarian) and high (more traditional) gender beliefs were significant ($B = 0.014$, $SE = 0.005$, $t = 2.620$, $p = .009$). At low gender beliefs (more egalitarian) the *country-level* indirect path was stronger than the *individual-level* path, while at high gender beliefs (more traditional) the *individual-level* path was stronger than the *country-level* path (See Table 4.3). That is, perceptions of unfairness stemming from inequalities in the division of labour contributed the most to women's life satisfaction for those women who were in more egalitarian countries (regardless of individual women's beliefs), and the least for those women who lived in more traditional countries. Individual women's beliefs (regardless of absolute level of gender beliefs held in country) were secondary factors as compared to country-level gender beliefs in explaining the association between share of housework and

family satisfaction via perceptions of unfairness. In an additional model, we included a three-way interaction to assess whether country-level gender beliefs interacted with individual-level gender beliefs in the proposed moderated mediation model to predict family satisfaction. This interaction was not significant (p = .834) and thus not included here.

Differences across time. To test the robustness of our results we ran the exact same model by using the Wave 2002 ISSP data. Supporting our hypotheses and original results from the Wave 2012 data we replicated all findings. Descriptive statistics for the 2002 data are presented in Table S6 and results are presented in Table S7 in section A in the online supplementary materials. In an additional analysis, we compared our models for women across time. Results indicated that all the indirect effects were statistically significantly weaker in 2012 than in 2002 (See Table S8 in section A in the online supplementary materials). Further examining the direct paths and interactions, we found evidence that these links were generally weaker in 2012 than in 2002, apart from the *country-level* interaction in predicting perceptions of unfairness which was stronger in 2012 than in 2002 (B = -0.525, SE = 0.232 t = -2.259, p = .024). That is, the associations between greater share of housework, women's perceived unfairness, and their family satisfaction were weaker in 2012 than in 2002, and although, the relationship between share of housework and perceived unfairness was stronger in more egalitarian (vs. more traditional) countries at both time points, being in a more egalitarian country (vs. more traditional) had stronger effect on women's perceived unfairness in 2012 than a decade earlier.

Discussion

The current study assessed the relationship between individuals' experiences of inequalities in the household and their subjective wellbeing through individuals' perceptions of injustice which was conditional on individual-level and country-level gender beliefs. Supporting *Hypothesis 1*, individuals who had a higher relative share of housework within their family perceived this division as relatively more unfair. Supporting *Hypothesis 1a* and *1b*, we found that this association was moderated by both individual-level and country-level gender beliefs. People who endorsed more egalitarian gender beliefs, relative to other people in the world (regardless of the absolute level of gender beliefs held in country), perceived an imbalance in housework as relatively more unfair. Simultaneously, individuals who lived in a country which normatively endorsed more egalitarian gender beliefs perceived an imbalance in housework as relatively more unfair (regardless of those individuals' own gender beliefs). In turn, across the world, perceptions of unfairness were negatively associated with family

satisfaction for women but not for men (partially supporting *Hypothesis 2*). Finally, we found that the association between a greater share of housework and lower level of family satisfaction emerged through women's perceptions of unfairness but there was no effect for men (partially supporting *Hypothesis 3*). This observed pattern of results reiterates the importance of our extension of cultural psychology to the justification literature. Understanding justification of inequality requires distinguishing (1) legitimizing beliefs from palliative effects as two parts of the process, and (2) individuals' holding personal beliefs from individuals living in contexts where justifying beliefs are high as two levels of the process.

Legitimizing beliefs operate at two levels. Individuals' own gender beliefs *and* country-level gender beliefs attenuated the effects of unequal divisions of housework on the perceived unfairness of those divisions. The negative relationship between share of housework and perceived unfairness was weaker for people who held more traditional beliefs (relative to others in the world regardless of the absolute level of gender beliefs held in country), *and* for people who lived in more traditional countries (regardless of individuals' personal beliefs). This process of legitimization is consistent with previous research showing the moderating effect of both personal beliefs (Bahamondes et al., 2019; Braun et al., 2008; Greenstein, 1996) and societal beliefs (Jansen et al., 2016) on individuals' perceptions. System justification theory explains that individuals are motivated to endorse beliefs that justify persistent and inevitable inequalities, which mitigates their perceptions of injustice (Jost, 2019; Jost & Banaji, 1994; Jost et al., 2004). Simultaneously, relative deprivation theory suggests that the cultural context influences people's perceptions of injustice because individuals evaluate the fairness of their circumstances through comparing themselves to a reference group (Crosby, 1976, 1982). Our results support both accounts, highlighting that these two theories are compatible and together provide a better framework for explaining the multiple levels of the legitimizing process.

The palliative effects of justification unfold through fairness perceptions. Inequalities in the household measured by unequal divisions of housework were negatively related to women's, but not men's, family satisfaction through women's perceptions of unfairness of the labour division. This is consistent with prior research identifying the mediating role of people's perceptions in the link between inequalities and subjective wellbeing, with stronger effects for disadvantaged groups (Bahamondes et al., 2019; Lavee & Katz, 2002; Robinson & Spitze, 1992). System justification theory (Jost, 2019; Jost & Banaji, 1994; Jost & Hunyady, 2002; Jost et al., 2008), and relative deprivation theory (Crosby, 1976, 1982; Davis, 1959;

Thompson, 1991) suggest that inequalities indirectly affect people's subjective wellbeing through individual's perceptions of injustice. We found further evidence that individuals' perceptions of (in)justice can function as a filter through which the subjective experiences of inequalities unfold, in such, that it is less harmful to people's wellbeing.

Country-level justifying beliefs have a stronger effect than women's own gender beliefs on their subjective wellbeing through perceptions of unfairness. We found that being in a context where people held justifying beliefs had a stronger palliative effect on women's wellbeing through perceiving inequalities as less unfair, than holding personal beliefs that justify inequalities. We integrated two lines of research—system justification (Jost, 2019; Jost & Banaji, 1994; Jost et al., 2004) and relative deprivation (Crosby, 1976, 1982)—to compare the effects of justifying beliefs at different levels. Prior research showed that the national context plays an important role in providing a benchmark for evaluating perceptions of injustice (Jansen et al., 2016), and influencing people's subjective wellbeing (Forste & Fox, 2012; Greenstein, 2009). This study is among the first to test the difference in justifying effects across levels and to show that cultural beliefs might be *more* important than individuals' own beliefs in how much perceiving inequalities as unfair affects individuals wellbeing. This further supports the idea that individual-level effort is limited to the extent that people live in contexts where everyday life is influenced by structural inequalities (Ridgeway & Correll, 2004; Risman, 2004; Treas & Tai, 2016). The relatively stronger effects of country-level beliefs on the individual-level process of palliating negative impacts of inequalities also have theoretical implications for psychological research. Particularly, acknowledgement of cultural influences on human behaviour should motivate psychological research that draws more strongly on cross-cultural psychology to gain better insights into psychological processes (see Wang, 2016).

We also identified notable gender differences in justifying processes. The effects were generally stronger for women than for men, and perceived unfairness was a mediator for women but not for men. This is consistent with prior research on household inequalities (see Lavee & Katz, 2002; Robinson & Spitze, 1992). Indeed, system justification research suggests that those who suffer more from inequalities, benefit more from adopting strategies that buffer the negative effects of inequalities (Bahamondes et al., 2019; Hammond & Sibley, 2011; Jost et al., 2003). In lack of alternatives (e.g., egalitarian households), as women benefit more from rationalizing gender inequalities, the mitigating effects of justifying beliefs on women's perceptions of unfairness stemming from inequalities contributed to women's, but not men's, life satisfaction.

In contrast, indirect effects from inequality in the household on family satisfaction did not emerge for men. Although, holding more egalitarian gender beliefs was related to men's greater perceptions that the (typical) imbalance in the division of labour was unfair to their partner, men's sense of unfairness did not translate into being less satisfied with their family life. The lack of mediation for men could indicate that although men recognized the unfairness of their household contribution, they did not feel less satisfied because they were not violating expected gender norms (see Eagly, 1987; Robinson & Spitze, 1992). It is possible that for men the effects of inequalities on their subjective wellbeing could be better modelled by assessing feelings of guilt (see Jost et al., 2008). Accordingly, research may identify the harmful effects of household inequalities on men's family satisfaction by indexing their romantic *partner's* sense of injustice and/or satisfaction. Thus, future research should investigate the justification process for men by examining more indirect pathways from the inequality experienced by *close others* to men's subjective wellbeing.

Finally, we replicated our analysis using the 2002 wave from the ISSP data to extend existing research by assessing potential differences across time in our predicted model for women. We identified significant differences showing overall similar patterns but stronger effects in 2002 than ten years later. The only exception was the country-level moderation indicating that for women being in a more (vs. less) egalitarian country had a stronger effect on their perceived unfairness upon inequalities in division of labour in 2012 than ten years earlier. This greater country-level effect could reflect increased data quality including more countries ($Ncountries_{2002} = 30$ vs. $Ncountries_{2012} = 42$) with a potentially greater variability in country-level gender equality. Alternatively, it is possible that as gender norms and labour divisions have diverged from traditional to more egalitarian over decades (Seguino, 2007; Treas, 2010), the progress towards equality is a slow but exponential development (i.e., education fostering career opportunities, financial independence and improved family planning). The exponential growth effect could result in larger gender gaps across countries explaining the greater country-level effects. Considering the complexity of our model though, there could be many possible reasons for the overall weaker effects in 2012 that go beyond the scope of this research. Thus, our exploratory findings regarding time differences points towards future directions to examine potential changes in justifying processes over time.

Caveats and Future Research Directions

Our study provided important insights into how justification processes operate at different levels, nonetheless, our analysis was limited. Most importantly, although our main

objective was testing gender beliefs in relation to gender inequalities and people's subjective wellbeing, there are other potentially contributing factors that we cannot account for (see Mueller & Kim, 2008). For example, marital commitment, symbolic values and interpersonal outcomes all contribute to fairness perceptions and family satisfaction (i.e., perceiving housework as caring for others rather than a chore; Gager, 1998; Hawkins et al., 1995; Hochschild & Machung, 2012; Tang & Curran, 2013; Thompson, 1991). Future research should also investigate different components of beliefs that justify inequalities in different ways—for example, by exploring the stereotype content of gender beliefs that emphasizes subjectively positive qualities (e.g., caring), which are highly rewarded in gender role conforming behaviour (Glick & Fiske, 1996; Jost & Kay, 2005; Kay & Jost, 2003; Kay et al., 2007)

Another limitation of our research was relying on the assumption that people choose different reference points depending on the cultural context. Although gender differences in comparison referents is a widely supported notion (see Gager, 1998; Greenstein, 2009; Hawkins et al., 1995; Thompson, 1991), the cross-cultural differences *within* gender differences in comparison referents implied by this argument have not directly been assessed in prior research, nor were they assessed in our research. Development and implementation of measures to assess comparative references across cultures is difficult and costly. Yet, measuring individuals' choice of reference point would enable future researchers to directly assess the effects of within- vs. between gender comparisons in modelling justification processes across cultures. These tests would examine the extent to which effects of inequalities on perceived unfairness are a result of women comparing themselves with other women in more traditional countries vs. comparing themselves with both women and men in more egalitarian countries (see Greenstein, 2009).

We statistically adjusted for the most important factors that are typically considered to affect perceptions of injustice (e.g., share of income, absolute and relative financial working hours, household size), but due to our reliance on existing large-scale data, we were limited to cross-sectional data from the existing measurements that were consistent across countries. For example, a data-related limitation was to operationalize inequality as relative share of housework—which is a key aspect of gender inequalities, nonetheless there are several other indices of inequalities in relationships that future research on justification processes may investigate. For example, power dynamics between partners (Hammond & Overall, 2017), or invisible labour which is a unique dimension of housework that refers to a large range of non-physical activities that nonetheless require effort (Daminger, 2019; Hawkins et al., 1995) are

factors that future research should account for in modelling justification precesses. Furthermore, there is a growing need to develop and utilize new gender attitude measures because gender norms and roles are changing (Walter, 2018). Whereas consistency in large cross-national data collection over several waves is undeniably challenging, establishing a collection of data with a broad variety of modern measurements that captures more subtle forms of justifying beliefs is essential for deepening our understanding of justifying mechanisms.

The complexity of our analyses also set constraints on the amount of detail that we could thoroughly examine. For example, we identified differences in our models across time, but a more detailed analysis is required to investigate what has changed over a decade in the ways of how justification operates. Furthermore, our findings are consistent with justification theory suggesting that justification decreases perceptions of injustice and thereby palliate negative effects of inequalities—at least for women—however, our results cannot speak for the causal direction of these links. Therefore, experimental and/or longitudinal research could further clarify the direction of the associations found in our study.

Conclusion

The current research investigated a multilevel mechanism modelling the palliative effects of gender beliefs on subjective wellbeing through alleviating individuals' perceptions of injustice upon inequalities. Our findings showed that inequalities in the household were negatively related to individuals' family satisfaction and this link occurred through individuals' perceptions of unfairness. We demonstrated that there were two levels through which justifying gender beliefs conferred palliative benefits: attenuating the extent to which women who held justifying gender beliefs (1), and were embedded in contexts where people who held justifying gender beliefs (2) perceived the imbalance in household inequalities as less unfair as compared to women without these attributes. Our research is among the first to specify the complex multilevel mechanism through which justification operates for the benefits of the disadvantaged.

V. GENERAL DISCUSSION

The primary objective that motivated this thesis was to conceptualize and investigate cooperative gender beliefs. This investigation began to address the theoretical puzzle of why people adopt beliefs, roles, and behaviours that ultimately reinforce inequalities. Three studies advanced current psychological understanding of gender inequalities in two major ways. First, I applied a multidisciplinary approach that recognized the interconnections between biological and cultural factors, individual-level and societal-level inequalities. Second, to develop a rigorous understanding of gender inequalities, I adopted a theoretical and methodological stance that acknowledged how gender inequalities can be fostered by both men and women. Thus, my research focus simultaneously examined aspects of inequalities for those who generally benefit from the status quo as well as for those who can pay objective costs in exchange for subjective benefits. In this chapter I review the specific research questions, and corresponding findings, from this thesis. I then discuss the theoretical implications and methodological advancements my research has made (see summary in Table 5.1), along with practical implications for challenging gender inequalities. Finally, I address caveats and limitations of my thesis, and consider directions for future research on how cooperative gender beliefs and inequalities should be further examined to better understand people's engagement in unequal social structures.

Table 5.1. *Highlights of the theoretical and methodological contributions of the present thesis*

Thesis Study	Theoretical Contribution	Methodological Contribution
	Cooperative gender beliefs are linked to divisions of labour	
Study 1.	• Differentiating three interrelated but distinct cooperative gender beliefs: measures of religiosity, benevolent sexism, and gender specific meritocracy, shared content and function but they were distinct indicators • Cooperative gender beliefs weakly predicted time allocated to unpaid domestic work, a traditionally female role, but they were unrelated to paid work, a traditionally male role • Effects emerged mainly for women and in relation to a traditionally female role	• Using a large nationally representative panel sample (N = 9048) from a highly egalitarian country • Testing a zero-inflated multiple regression model assuming negative binomial distribution to account for the excessive number of people who reported zero time allocated to labour • Using measures better fitted to detect subtle forms of gender inequality supporting beliefs
	Cooperative gender beliefs are linked to fertility	
Study 2.	• Assessing possible functions of cooperative gender beliefs. Benevolent sexism was associated with reproductive outcomes: individuals' fertility rate predicted higher endorsement of benevolent sexism, but benevolent sexism did not predict having a	• Using a large nationally representative panel sample (N = 6540) from a highly egalitarian country • Testing a zero-inflated structural equation model and testing cross-lagged effects across two time points

	greater number of children over a two-year timeframe • Cooperative gender beliefs justified inequalities upon parenthood, rather than led to reproductive benefits • No gender differences emerged in these effects	• Using measures better fitted to detect subtle forms of gender inequality supporting beliefs
Study 3.	**Cooperative gender beliefs are linked to subjective wellbeing** • Differentiating levels of cooperative gender beliefs: beliefs operated at the individual *and* at the societal level • Distinguishing parts of the justifying mechanism: Cooperative gender beliefs legitimized inequalities and attenuated men's and women's perception of injustice; and conferred palliative benefits for women, but not for men • Despite large gender gaps in divisions of labour, effects emerged mainly for women	• Using a large cross-national sample across 36 countries (N = 23,385) • Testing an unconflated multilevel moderated mediation model to account for differences in levels of cooperative gender beliefs, and to distinguish parts of the process (legitimizing and palliative effects) • Comparing results across two timepoints to test model robustness

Cooperative Gender Beliefs are Linked to Divisions of Labour

Study 1 investigated different types of cooperative gender beliefs and their relation to gender specific time allocation to domestic and financial labour. Traditional gender beliefs are associated with adherence to gender roles and divisions of labour (Eagly & Steffen, 1984; Koenig & Eagly, 2019; Tai & Treas, 2012; Treas & Tai, 2016). However, researchers have used several different types of measures of beliefs that refer to imbalanced gender relations without much reference across fields. Thus, a gap in the literature existed regarding to what extent these different measures capture the *same* beliefs about unequal gender roles. In Study 1 I examined different types of beliefs under the concept of *cooperative gender beliefs*. The three selected belief systems were religious beliefs that provide supernatural legacy to gender roles; benevolent sexism that praises women for adhering to traditional roles; and gender specific meritocracy that expresses that gender relations in society are fair. I found a small overlap in the content and function of these beliefs, indicating that these are distinct but similar types of cooperative gender beliefs which play a statistically significant but minor role in gendered time allocation to traditionally female, but not to male, roles. Particularly, religiosity and benevolent sexism predicted more domestic labour time (a traditionally female role) for women, but not for men, and meritocratic beliefs predicted less domestic labour time for men, but not for women. No effects emerged for time allocated to paid work (a traditionally male role).

Study 1 corroborated and extended the literature on gender beliefs and gender roles in two major ways. First, benchmarking theories of cooperative gender beliefs by differentiating types of beliefs and testing the extent to which they overlap helped developing conceptual clarity of what cooperative gender beliefs are, what forms they take, and what they do. Additionally, methodological highlights of Study 1 were utilizing a large panel sample of a highly egalitarian country; using measures designed to capture subtle and subjectively positive forms of inequality maintaining beliefs (e.g., benevolent sexism); and statistically adjusting for zero-inflated and correlated data. Second, utilizing data from a large nationally representative sample from a highly egalitarian country indicated that gender gaps in division of labour persist even in developed nations that rank high on global gender equality indexes (see World Economic Forum, 2018), and a small but statistically significant part of this gender gap is explained by cooperative gender beliefs. Intriguingly, results showed that most effects emerged for women, and only in relation to unpaid work (a traditionally female role), but not to paid work (a traditionally male role). These gendered effects are reflective of

general patterns demonstrated by previous findings (e.g., Bianchi et al., 2000), which I will discuss in the next sections. The major takeaway from Study 1 was that different types of beliefs that emphasize cooperation between men and women have their unique contribution to gendered roles even in a highly egalitarian country, but there were only predictive of a female role and mainly for women. Finally, results informed Study 2. Study 2 built on the finding that benevolent sexism was the strongest predictor of women's time allocation to domestic roles, and further explored the theoretical propositions of benevolent sexism.

Cooperative Gender Beliefs are Linked to Fertility

Study 2 investigated two possible theorized functions of cooperative gender beliefs. First, system justification theory predicts that heightened and inevitable inequalities—that new heterosexual parents generally experience (Adema et al., 2015; Cech & Blair-Loy, 2019)—prompt people to endorse cooperative gender beliefs that justify their circumstances (Jost & Banaji, 1994; Jost et al., 2004; Jost et al., 2008; Laurin et al., 2010). Second, the mating strategy hypothesis predicts that people who adopt cooperative gender beliefs will adopt roles, seek partners, and relationship dynamics that facilitate a high-fertility mating strategy (Gul & Kupfer, 2018; Wood & Eagly, 2002; Zentner & Eagly, 2015). No research to date has, however, empirically tested this latter association. I tested evidence for each perspective in a bidirectional cross-lagged model between individuals' endorsement of benevolent sexism and their fertility rate over a two-year period. Results demonstrated that having a greater number of children was associated with endorsing higher levels of benevolent sexism two years later, but no effect emerged for the other direction. Thus, Study 2 provided suggestive evidence that one function of cooperative gender beliefs is justifying inequalities that heterosexual parents experience, while no evidence emerged that cooperative gender beliefs function as a mating strategy to maximize reproductive benefits.

Study 2 theoretically and methodologically demonstrated a way to integrate two different theoretical perspectives rather than positioning them as mutually exclusive. Evolutionarily informed accounts and social-constructionist accounts are often treated as oppositional paradigms (i.e. nature vs. nurture) that must be tested against each other to reveal which best explains gendered patterns. However, contemporary opinion emphasizes that explaining complex social phenomena requires integrating different theoretical approaches (Buss & Schmitt, 2011; Ickes, 1993; Sidanius et al., 1991). Study 2 proposed that these are interrelated theoretical accounts and they *both* stress that the structure of traditional heterosexual relationships involve inherent inequalities stemming from interdependency.

Together, these two accounts suggested a process in which (a) inequalities prompt cooperative gender beliefs which then perpetuate those inequalities; and (b) encourage mating strategies which are based upon, and further foster those inequalities. Finding evidence in support of only one of these accounts does not refute the other account. Evolutionary hypotheses, such as increasing reproductive benefits, cannot be experimentally tested and any scientific assessment is methodologically challenging. Study 2 provided a way to tentatively test these types of theoretical assumptions. Having found support for the system justifying function of benevolent sexism, the remaining research focused on justifying mechanisms in which cooperative gender beliefs were predicted to serve legitimizing functions.

Cooperative Gender Beliefs are Linked to Subjective Wellbeing

Study 3 investigated the proposition that cooperative gender beliefs that legitimize and reinforce inequality also help people cope with that inequality. The idea that beliefs can be palliative is not new (Jost, 2019; Jost et al., 2008), however, there are still gaps in our understanding of how the justifying process operates. Study 3, thus, uniquely integrated different fields of research—justification (Jost & Banaji, 1994) and relative deprivation (Crosby, 1976)—to develop a model that simultaneously assessed individual-level and societal-level cooperative gender beliefs. I tested whether cooperative gender beliefs mitigated people's perceptions of injustice upon inequalities in division of household labour, which in turn was expected to relate to individuals' subjective wellbeing. By doing so I differentiated between the effects of individuals endorsing personal beliefs about gender roles (individual-level), and that of individuals being in contexts where people endorse cooperative gender beliefs (societal-level). Results indicated that having a larger share of housework was associated with individuals' greater perceptions of unfairness, however both individual and societal level cooperative gender beliefs mitigated perceptions of unfairness. Which, in turn, attenuated the negative link for women, but not for men, between perceptions of unfairness and subjective wellbeing.

Assessing the multilevel process of justification was again motivated by the desire to theoretically and methodologically demonstrate ways of integrating different theoretical accounts and fields of research to advance our knowledge of complex social psychological phenomena. Study 3 combined diverse areas of literature (household research, gender inequality research, and justification research), and different disciplines (social psychology and sociology) that refer to processes that exist within individuals *and* processes that exist

within societies. Study 3 also demonstrated how methods can be used to advance these theories. First, Study 3 corroborated and extended prior research by modelling the multilevel process of justification that operates at the individual - and at the societal level. Second, a moderated mediation model was designed to clarify the distinction between (a) justifying beliefs (that legitimize inequalities and thereby making inequalities seem less unfair) and (b) the palliative effects of these beliefs (that is, mitigating the subjective effects of inequalities on people's wellbeing). Finally, Study 3 provided evidence that personal beliefs (individual-level) and cultural beliefs (societal-level) function in similar ways to justify inequalities and palliate the negative effects of inequalities.

In summary, the results across the multiple studies presented in this thesis highlight key aspects of how cooperative gender beliefs relate to costs and benefits of gender inequalities in terms of the forms, functions, and levels of these beliefs. Cooperative gender beliefs can take different forms such as benevolent and religious idealization of the role of women and men. Study 1 differentiated among different forms of gender beliefs and showed that these beliefs were all, though weakly, related to women's tendency to adhere to their traditional female role, while they were not related to men's role. Furthermore, although, previously hypothesized, I did not find evidence that gender beliefs function to promote reproductive benefits. Instead, Study 2 indicated that gender beliefs might serve as justification for inequalities upon parenthood. Further supporting the justifying function of gender beliefs, Study 3 found that for women who endorsed, *and* who were embedded in contexts where people endorsed high cooperative gender beliefs, the negative effects of inequalities on their subjective wellbeing were attenuated through their perceptions of unfairness. The results drawn from the research presented in this thesis, thus, highlighted several ways of how cooperative gender beliefs relate to the costs and benefits of unequal gender roles. Next, I discuss the two primary goals of my thesis to critically evaluate the theoretical and methodological contributions against the aims of my thesis.

Theoretical Contribution

The central objective of this thesis was to investigate why people adopt beliefs that maintain inequalities. I proposed that one of the reasons is that cooperative gender beliefs help people manage trade-offs between the costs of inequalities and the benefits of inequalities. The conceptualization of cooperative gender beliefs is uniquely important to understanding trade-offs because it highlights cooperation as a central aspect of how heterosexual interdependency is embedded in unequal social structures. Cooperation refers to

a process in which people work together based on shared interest and/or for a mutual benefit (Lindenfors, 2017). Accordingly, cooperative gender beliefs all have content that *describe* women and men as a cooperative unit, a team with different skillsets to fulfil roles that in combination ideally lead to mutual benefits (Koenig & Eagly, 2019; Wood & Eagly, 2002; Wood & Eagly, 2012).

Cooperative gender beliefs encourage women to invest in traditional relationship oriented and caring roles which leaves women economically vulnerable and financially dependent on their partner. Beliefs about men and women as having separate cooperative roles bolster societal inequality by creating segregation between the gender groups (see Fiske & Bai, 2019). For example, women's communal and domestic roles along with men's competence and agentic roles create status differences and gender hierarchy. Cooperative gender beliefs delineate groups of "men" and "women" as reference points, thereby generating two distinct sets of comparison models for men and women. As long as men and women see themselves as different kinds of people, they are likely to compare themselves, their life situations and life options within their own gender group (Risman, 2004) and evaluate the fairness of their situation relative to that comparative reference (Crosby, 1976; Thompson, 1991). This process explains how gender beliefs contribute to people's failure to recognize injustice. An unequal social structure will likely not be *experienced* as oppressive or coercive if women and men believe that they are not similarly situated, rather, that their roles are complementary (Risman, 2004).

When people adopt beliefs that undermine their personal and/or ingroup interest, one reason is because they are attempting to reduce some of the individual-level harms of gender inequalities (Jackman, 1994; Jost & Hunyady, 2002). Ironically, though, any subjective benefits gained from endorsing cooperative gender beliefs go on to justify the exact unequal conditions that required adopting cooperative gender beliefs in the first place (Jost & Hunyady, 2005). Thus, there are multiple trade-offs that individuals make. Understanding trade-offs for women and men requires recognizing that system-justifying processes can differ within individuals and within societies. Cooperative gender beliefs offer women benefits at the individual level (e.g., intimacy and praise; Table 5.2), but these benefits are only available in a societal system in which women receive praise for adopting roles that give advantages to men (e.g., adopting religious beliefs that idealize women who accept their husbands' authority; endorsing sexist beliefs that praise women's warmth while undermining women's competence).In Table 5.2., I summarize some of the costs and benefits associated

with cooperative gender beliefs at the societal and at the individual level that were investigated in the present thesis.

Table 5.2. *Costs and benefits associated with cooperative gender beliefs for women and men at the societal and individual level that were theoretically and/or empirically investigated in the current thesis*

		Costs	Benefits
Societal level			
	Women	- Restricted roles - Less power, low status	- Not explored
	Men	- Restricted roles	- More power, high status
Individual level			
	Women	- **Free labour (Study 1)**	- Intimacy - **Reproductive benefits? (Study 2)** - **Justification (Study 2 and 3)**
	Men	- Not explored	- Intimacy - **Reproductive benefits? (Study 2)** - **Justification (Study 2 and 3)** - **Receiving free labour (Study 3)**

Note. This is not an all-inclusive catalogue of costs and benefits that are associated with cooperative gender beliefs. This table presents the most relevant costs and benefits in this thesis. Bolded factors were empirically tested in the present thesis. “Reproductive benefits” are left as a theoretical question because Study 2 did not find empirical support for the claim.

Cooperative gender beliefs are associated with objective costs. These beliefs maintain gender inequalities at the societal - and interpersonal level in a way that is more damaging for women and more beneficial for men (Eagly & Steffen, 1984; Jackman, 1994; Overall & Hammond, 2018; Wood & Eagly, 2012). Cooperative gender beliefs foster inequalities at the societal level by defining characteristics, skills, and roles of women and men as reflective of men's greater social power and higher status relative to women (Fiske et al., 2002; Koenig & Eagly, 2014; Wood & Eagly, 2012). Despite traditional gender roles potentially being costly for men *and* women because roles restrict the behaviours and goals of all gender groups, the "restricted" roles for men are typically afforded greater status and power. Second, cooperative gender beliefs are also linked to inequalities at the interpersonal level because they create career-family trade-offs for women, but not for men (Cheng et al., 2019; Hammond et al., 2017; Lee et al., 2010; Overall & Hammond, 2018). Cooperative gender beliefs are associated with gender roles that encourage women to perform more of the unpaid domestic labour, which simultaneously enable men to benefit from receiving women's free labour (Fuwa, 2004; Treas & Tai, 2016). Indeed, Study 1 showed that endorsement of cooperative gender beliefs was associated with gendered time allocation to unpaid domestic labour mainly for women, but not with paid labour, indicating specific restraints on women's socioeconomic freedom. Thus, cooperative gender beliefs have objective costs because they prompt family-oriented choices in women, and career-focused choices in men that accumulate into inequality also at the societal level.

Cooperative gender beliefs are also associated with individual level benefits in three distinct ways. First, they create mutual benefits for women *and* men because they facilitate intimate heterosexual relationships by encouraging affectionate, caring and supporting behaviour (Glick & Fiske, 1996), which should ultimately result in reproductive benefits (Gul & Kupfer, 2018). In contrast to this theoretical assumption, though, I found no evidence that cooperative gender beliefs functioned to maximize reproductive benefits (Study 2). Second, cooperative gender beliefs confer subtle and subjective benefits for women because they justify inequalities and thereby mitigate women's sense of injustice (e.g., Bahamondes et al., 2019; Hammond & Sibley, 2011). Indeed, cooperative gender beliefs were associated with reduced perceptions of unfairness of inequalities in the household, which in turn mitigated the negative relationship between unfairness and subjective wellbeing for women, but not for men (Study 3). Third, cooperative gender beliefs are associated with objective benefits for men, as they are beneficiaries of women's free labour (Fuwa, 2004; Treas & Tai, 2016), which was also shown in the present thesis (Study 3).

In sum, the studies presented in this thesis indicated that the costs and benefits that individuals must consider differ for men and women. When women endorse personal beliefs that emphasize cooperation between men and women, they obtain *subjective* benefits (e.g., being praised) *but* simultaneously these exact same beliefs convey *objective* cost (e.g., doing more unpaid labour). In contrast, cooperative gender beliefs offer men *objective* benefits (e.g., receiving women's free labour) with relatively little costs (e.g., doing more *paid* labour).

Methodological Contribution

The second aim of my thesis was to advance current theories by using rigorous statistical testing. All research methods come with their own sets of strengths and weaknesses but testing theoretical assumptions by applying appropriate methods is key to advancing scientific knowledge. In the current theories, inherent methodological difficulties have made it challenging to test assumptions related to the costs and benefits of cooperative gender beliefs, such as "fertility benefits" or how beliefs function within individuals *and* across societies. In Table 5.1., I show how the theoretical advancements of each study were complemented by complex statistical techniques. Here I describe three primary ways that my thesis built on prior studies that examined cooperative gender beliefs: sample related, measure related and method related advancements.

First, sample related advancements in the studies presented in this thesis were increasing generalizability to larger populations and across countries. For example, several prior studies used small and convenience samples (e.g., university students; Burn & Busso, 2005), focused on specific groups (e.g., Protestants; Ellison & Bartkowski, 2002), and only on one gender (e.g., only women; Greenstein, 2009; Ruppanner, 2008). I addressed this issue by using large-scale samples with sample sizes of over 5000 that are highly representative at the country level (Study 1 and 2). Additionally, these samples were from a highly egalitarian country which enabled me to examine gender inequalities where it is the least expected. In Study 3 I utilized a large cross-national sample including 36 countries across the world which was essential to see whether patterns of interest generalized across countries.

Second, the present thesis made measurement related advancements by addressing issues, for example, dichotomizing continuous measures (e.g., Jansen et al., 2016), and using old-fashioned gender beliefs questions (e.g., Bianchi et al., 2000; van der Lippe et al., 2018). First, breaking continuous scales into categorical data results in loss of information, reduces

statistical power and increases the probability of Type II error (Streiner, 2002). Thus, utilizing continuous scales when available is generally a recommended practice to follow (see Study 3). Second, selecting the right measures for gender beliefs is problematic because gender beliefs change over time and across countries (Seguino, 2007; Van De Vijver, 2007; Walter, 2018). In data collection for small samples, researchers can adopt more suitable measures, however, large-scale cross-national, or longitudinal data with several waves are less subject to measurement change. Thus, researchers need to use what is available in large cross-national samples with multiple waves (see Study 3). Nevertheless, researchers must try to overcome this issue by adopting more up-to-date measures when possible—especially in more egalitarian countries (see Study 1 and 2).

Finally, the most important advancement on prior literature was promoting more developed modelling practices by employing sophisticated statistical techniques. Although, using advanced methods is subject to scientific development over time—such as testing parts of the same process within a single comprehensive model (e.g., moderation vs. mediation; Greenstein, 2009; Lavee & Katz, 2002)—there are other method related limitations that researchers should address. For example, running separate models for women and men or including many predictor variables with inconsistency in adjusting for variance across gender; possibly ignoring zero-inflation in data; and basing significance testing solely on p-values without reporting confidence intervals (e.g., Jansen et al., 2016; Treas & Tai, 2016; van der Lippe et al., 2018).

In the present thesis I attempted to improve statistical practice by applying appropriate and rigorous statistical models to handle some of these method related issues. One example of applying rigorous statistical testing is handling zero-inflation in data which has been identified as a major issue to address in family research (see Atkins & Gallop, 2007). Zero-inflated regressions model the probability of zero-outcomes, while simultaneously assessing the variance of non-zero-outcomes (Zuur, Ieno, Walker, Saveliev, & Smith, 2009). For example, in Study 2 the excess of zeros in the value of number of children indicated that there was a larger proportion of people who had no children than would be expected by chance. This can be explained by considering two processes which must be distinguished: (a) there are '*possible'* reasons for zero outcomes which is reflective of a process that generates counts (some of which are zero). That is, for the 'same' reason some people have no children, others have some children (e.g., attitudes and beliefs). (b) Beside possible reasons, there are '*certain'* reasons for zero outcomes which is reflective of a process that either generates zeros or not (i.e., there are reasons that make it *certain* that someone has no children, such as age or

health issues), which explains the excess of zeros as predicted by a logit model. Thus, the count model estimates why people *possibly* have a given number of children (including zero), and the zero-inflation model indicates the probability of people falling (or not falling) in the group of *certainly* having no children. Without estimating both models, results from zero-inflated data are not reliable.

Multidisciplinary Approach

Research on cooperative gender beliefs needs to be multidisciplinary. The first theoretical requirement of investigating cooperative gender beliefs is accounting for the interrelated influence of biological and cultural factors on gender relations. A second requirement of investigating cooperative gender beliefs is that they account for dependency between men and women that exists in personal relationships (i.e., individual-level processes) and in intergroup dynamics (i.e., societal-level processes). I addressed these requirements by integrating *evolutionary* and *biopsychosocial* theories into a framework to assess how cooperative gender beliefs function to trade off costs and benefits of *personal* experiences of inequalities that are embedded in unequal *social structures*. By doing so, my research contributed to the literature in two ways. As I discuss next, my thesis demonstrated ways of integrating theories and different disciplines— that were often treated as separate, oppositional or mutually exclusive—to advance scientific knowledge of a multilevel multidimensional social psychological issue. Second, I tested hypotheses derived from evolutionary and biopsychosocial theories to clarify different aspects of gender inequalities.

First, this thesis highlighted the importance of multidisciplinary research. Theoretically speaking, among systems of social inequalities, gender inequality is unique because men have greater societal power and higher social status than women across countries (Glick & Fiske, 1996; Jackman, 1994). Yet, at the same time, heterosexual men and women are interdependently bound together in intimate relationships (Glick & Fiske, 1996; Jackman, 1994). Both evolutionary and biopsychosocial theories recognize heterosexual interdependency as the key driving force of cooperation between women and men. Evolved sex differences and biological constraints are theorized to produce sex-typed cooperative patterns that are more effective than random collaboration between the sexes (Buss, 2017; Buss & Schmitt, 2011; Eagly & Wood, 1999; Wood & Eagly, 2002; Wood & Eagly, 2012). Distinct gender roles are one such form of sex-typed cooperation. However, gender roles shape people's beliefs about the relative characteristics, skills, and roles of women and men (Eagly & Steffen, 1984; Koenig & Eagly, 2014). Individual interactions between women and

men are, thus, underpinned by cooperative gender beliefs. Together cooperative gender beliefs and traditional gender roles ultimately bolster societal inequalities (Ridgeway & Correll, 2004; Risman, 2009; Wood & Eagly, 2002; Wood & Eagly, 2012). Thus, multiple interplays between biological and cultural factors systematically shape gender relations at the individual and at the societal level (Ridgeway & Correll, 2004; Sidanius et al., 1991; Wood & Eagly, 2012; Zhu & Chang, 2019). Building this comprehensive framework is required to investigate and advance our knowledge of the trade-offs associated with cooperative gender beliefs.

Second, my research contributed to the social psychological literature by testing hypotheses derived from existing theories. First, I tested an evolutionary theory which suggests that gender beliefs and roles serve mutual benefits by facilitating high reproductive outcomes (Gul & Kupfer, 2018; Ickes, 1993; Zentner & Eagly, 2015). As Study 2 did not provide evidence for this assumption, I cannot conclude that there were objective benefits for women and men at the individual level as suggested by evolutionary theory. Second, I tested social constructionist theories which suggest that cooperative gender beliefs and gender roles benefit men more than women (Glick & Fiske, 1996; Jackman, 1994; Koenig & Eagly, 2019; Ridgeway & Correll, 2004), which was supported in Studies 1 and 3. Third, the results reported in Study 1 and 3 also contributed to the system justification literature on how justification operates for the advantaged and the disadvantaged groups. System justification theory posits that justification operates differently for the advantaged and disadvantaged (Jost et al., 2008). Findings of the present thesis showed no gender differences in justifying inequalities upon parenthood (Study 2), and showed that although men were generally higher on cooperative gender beliefs that justify inequalities (Study 1 and Study 3), the subjective benefits of justification on people's wellbeing were only present for women and were stronger in contexts where inequalities were higher (Study 3). Thus, these findings suggest that both men and women endorsed justifying beliefs. Men were usually higher in these beliefs, but the subjective benefits were more present for women than for men.

Is Inequality a Women's Issue or a Gender Issue?

My thesis also proposed to advance current psychological understanding of gender inequalities by acknowledging the role of both men and women in maintaining inequalities. Despite demonstrated gender gaps in household research, and the recognition that men and women are interdependent in psychological research, men have often been excluded from scientific analysis. A possible reason for this one-sided research focus is that results

consistently show smaller effects for men than for women—also shown in Study 1 and Study 3. This research practice coincides with a real-world phenomenon that places more pressure on women to change in order to address gender inequalities. For example, interventions for gender inequality often mistakenly focus exclusively on empowering women by "masculinizing" them (i.e., introducing them to traditionally masculine domains), rather than pursuing ways to "femininize" men (i.e., introducing them to traditionally feminine domains (Bourdieu, 2001; Diekman & Eagly, 2000; Diekman et al., 2004; England, 2010). Women's greater responsiveness and the general lack of effects in men may prompt researchers to exclude men from the focus of analysis and rather concentrate on statistically significant effects stemming from investigating only women.

Including both women and men in the research analysis is theoretically important, though, because it provides explanations for these asymmetries and for the lack of effects in men. For example, from a system maintenance perspective, fostering cooperation through beliefs that encourage affectionate engagement is a cost-effective way of maintaining the status quo (Jackman, 1994; Sidanius & Pratto, 2001). That is, advantaged groups passively benefit from the compliance of disadvantaged groups. Indeed, men are passive beneficiaries of women's free domestic labour (Fuwa, 2004; Treas & Tai, 2016), which was also shown in Study 3. Furthermore, system justification theory suggests that those who benefit more from justifying inequality, will engage more in justification. Indeed, justification is generally stronger for women than for men (Bahamondes et al., 2019; Hammond & Sibley, 2011), which was also shown in Study 3. Thus, including both sexes in the analysis provides empirical evidence for gender differences in the ways of how justifying processes operate differently across advantaged and disadvantaged groups.

Taken together, the lack of empirical effects found for men and dismissal of the relational nature of gender inequalities have likely resulted in a scientific practice that places greater research focus on women. I addressed this issue and promoted a better research practice by assessing effects for both women and men. The lack of effects in men across studies should provide basis for future studies, rather than justification for excluding them. For example, finding that men's perceptions of injustice did not mediate the relationship between inequality in the household and men's family satisfaction (Study 3) points to future research directions of assessing alternative mediators (e.g., moral outrage or feelings of guilt; Wakslak et al., 2007). By demonstrating the importance of *any* results, I hope to promote better scientific practice that recognizes that statistically not significant results are significant theoretical findings.

Practical Implications

In the constant movement of resistance and change, social change towards equality is most often a result of the disadvantaged's struggles for achieving more equitable outcomes despite the resistance of the advantaged (Reicher, 2004). Ironically, passive tolerance and active participation in an unequal system is what keeps systems functioning. To the extent that cooperative gender beliefs buffer people against the subjective negative effects of inequalities (Study 3), they also hinder motivation to challenge the status quo (Becker & Wright, 2011). Modelling system justifying processes (Study 3) helps identify psychological barriers for disadvantaged groups to question, reject and challenge inequalities. Additionally, modelling the social embeddedness of justification processes (Study 3) stresses the idea that raising awareness must counter individual and collective forms of legitimization (see Jost et al., 2003).

Similarly, the poor research practice of focusing primarily on women is highly problematic because it reflects the misrecognition of power-relations in maintaining inequality. This one-sided research focus has two major consequences that further reinforce harmful inequalities. First, excluding men from the research focus feeds into dismissing the negative effects of gender inequalities on men's wellbeing (Croft et al., 2015; O'Neil, 2008, 2015). Second, assuming that women are more affected by gender inequalities results in the idea that gender inequality is a "women's issue" and places the responsibility of solving gender inequality more so on women than on men (England, 2010). For example, asymmetrical changes in gender stereotypes and roles create cultural and psychological barriers for men to overcome rigid gender stereotypes (Croft et al., 2015; Diekman & Eagly, 2000; Diekman et al., 2004). These barriers then promote men's resistance to change, and further foster women's motivation for change (Croft et al., 2015). Consequently, assigning extra responsibility to women to solve a mutually created social issue and ignoring the cooperative nature of gender relations is likely to result in a stalled revolution, and a vicious circle that reinforces inequalities.

The system justification literature covers a large part of how people legitimize unequal systems, however, less is known about how systems become delegitimized, and how social change occurs (Kay & Friesen, 2011; Laurin et al., 2013). Although the intertwined nature of ideology and structural inequality makes it difficult to challenge the status quo (Ridgeway & Correll, 2004), the endorsement of inequality maintaining ideologies does not predict the inevitability of societal change (Gaucher & Jost, 2011; Pratto, Stewart, &

Zeineddine, 2013). Social institutions and governmental policies play an important role in advancing equality as they channel cultural and societal values, open possibilities and opportunities for men and women, and shape the context for gender role playouts (Bergmann, 2000; Estes, 2011; Kleider, 2015; Morrisson & Jütting, 2005; Seguino, 2007; Treas & Lui, 2013). Broadening the spectrum of policies on gender equality can not only promote employment opportunities for women, but also facilitate parental leave for men, and part-time employment opportunities for both parents and encourage a work-share family model.

The present research program provided further evidence that women have taken on men's providing role more than men have taken on women's domestic role (Study 1). Domestic and financial labour are interrelated arenas of life, therefore improvements in one area and continuing gender imbalance in the other, not only remains gender inequality but also reinforces it (e.g., Bourdieu, 2001; Treas & Tai, 2016). Therefore, the call to increase female participation in paid labour must be accompanied with men's involvement in domestic labour (Croft et al., 2015). Examining reproductive related functions of cooperative gender beliefs (Study 2) has also important practical implications because increased awareness of the motivations underlying the endorsement of sexist beliefs that characterise women as particularly suitable for relationship oriented and caring roles can help professionals introduce useful interventions to reduce parenting related gender gaps (Bianchi, Sayer, Milkie, & Robinson, 2012). In sum, the very plain conclusion emerging from the findings of the current thesis is that not only maintaining inequality requires cooperation, but also its abolition must be a cooperative attempt.

Caveats, Limitations and Direction for Future Research

This thesis investigated how cooperative gender beliefs function to manage the costs and benefits of gender inequalities. As with any research, the studies presented in the current thesis have raised two types of questions: unanswered questions reflecting the limitations of this research program and new questions stemming from its findings. In this section I discuss some of the limitations of this thesis and make suggestions to further develop both theory and method for future research.

The vast literature on system justification suggest that system justification is a complex social psychological mechanism that encompasses several ideological, motivational and contextual motives, operates differently for the advantaged and disadvantaged, and has psychological and political consequences (Friesen et al., 2018; Jost, 2019; Jost et al., 2004; Jost & Hunyady, 2005; Laurin et al., 2010; Osborne, Sengupta, & Sibley, 2019). The system

justifying function of cooperative gender beliefs has gained support in Study 2 and has become the central theme in Study 3. Study 3 has advanced research by differentiating levels and parts of system justification, however, findings raised further questions. Study 3 showed that women have a disproportionately large share of housework compared to men, both men and women perceive the imbalance in housework division as unfair, however, men's perceptions of injustice did not have the same effect on their family satisfaction as it did for women. As mentioned above, future research is necessary to test other aspects of justification (e.g., guilt and morality) that may mediate the relationship between gender inequalities and subjective wellbeing for men. Thus, future research may explicitly focus on the system justifying motives of cooperative gender beliefs. Future researchers should develop research programs that are aimed at a multidimensional analysis of the role of system justification in gender relations with a particular focus on structural inequalities and heterosexual interdependency.

One of the primary aims of this thesis was to advance theory by using rigorous statistical testing, yet, as there is no one study that can provide perfect hypothesis testing, there is always room for methodological improvement. There are three particularly relevant method related issues that future research should address. First, focusing on the "relational nature" of gender inequality was an important aspect of my thesis, however, properly assessing gender relations at the individual level requires a dyadic perspective that due to data restrictions present studies lacked, and future research should address. Second, the studies presented in this thesis identified patterns, provided suggestive evidence and offered potential explanations for theoretically puzzling issues, however, the studies were not designed to test and show a clear cause-and-effect relationship. To further advance research regarding reproductive outcomes, for instance, future studies should collect and utilize data that allows tracking change in fertility rates throughout a larger proportion of individuals' lifespan along with their potentially changing beliefs and other related behaviour (e.g., attending to childcare and housework). Third, utilizing large nationally representative datasets enabled me to improve the generalizability of my findings (Study 1 and 2), though, the downside of this practice was the inability of designing the measurements that would best fit the research questions in interest. For example, one issue that I addressed in Study 1 and 2, remained an undefeatable obstacle in Study 3: using other than old measures of gender beliefs that were designed decades ago (Study 3). This is particularly an issue in gender inequality research because gender attitudes and roles are slowly but predictably changing over time (Seguino, 2007).

To best measure contemporary gender beliefs researchers should consider four key elements of remaining-changing beliefs about gender roles: First, subtle forms of unequal attitudes (i.e., benevolent sexism; Glick & Fiske, 1996) are becoming more prominent than overt hostility (Glick et al., 2000), which requires updating measures to capture implicit forms of inequality maintaining beliefs. Second, certain facets of gendered roles have become more egalitarian, while other aspects of inequality are obstinately perpetuated (Seguino, 2007). For example, while pursuing high education has become a socially accepted, even promoted, form of self-actualization for both women and men, women receiving higher income than her partner remains a potential issue in marital relationships prompting couples to reproduce the husband's dominance in alternative ways (Bittman, England, Sayer, Folbre, & Matheson, 2003; Brines, 1993; Tichenor, 2005). Thus, measures of gender beliefs must include different aspects of life that may or may not remain unfairly gendered. Third, changing gender roles are gendered: women have taken on more from men than men have taken on from women (Bianchi et al., 2000; Bianchi et al., 2012), which leads to asymmetrically changing gender stereotypes (Diekman & Eagly, 2000; Diekman et al., 2004). Thus, slowly but continuously changing gender beliefs and gender roles require the development of new measures that are well fitted to capture subtle beliefs about different aspects of both women's and men's life. Finally, although, women and men are two majority social identities, there is a growing awareness of gender diversity, and thus, a corresponding need for gender identity data to be inclusive of non-binary identities (Fraser, 2018).

Another somewhat measure related limitation in the current understanding of the costs involved in gender inequalities is the lack of scientific awareness and measurement to detect the invisible work—including both emotional and cognitive labour—associated with the visible. Intimate relationship research (e.g., Hammond & Overall, 2015; Overall & Hammond, 2018), household research (e.g., Bianchi et al., 2000; Fuwa, 2004; Fuwa & Cohen, 2007; Treas & Tai, 2016), and structural gender inequality research (e.g., Blumberg, 1984; Collins, Chafetz, Blumberg, Coltrane, & Turner, 1993; Coltrane, 2000; Ridgeway & Correll, 2004) all highlight the role of gender inequalities at the family-level in maintaining societal inequalities. However, very little attention has been given to inequalities in *cognitive work*—a unique dimension of housework identified by recent qualitative research referring to a large range of non-physical activities that require effort (Daminger, 2019). These invisible activites include anticipating family members' needs; identifying options for fulfilling needs; deciding among options; and monitoring outcomes (e.g., whether family members' needs were successfully met). As invisible work is highly taxing, yet not recognized, it is a frequent

source of ongoing stress and relationship conflict (Daminger, 2019). For example, a large amount of discrepancy in estimating one's contribution and eventually their perceptions of fairness stems from partners simply not knowing what the other one does and how much they contribute to the relationship (Gillespie, Peterson, & Lever, 2019). To further address this issue, one important next step is developing *quantitative* measures that adequately capture the invisible aspect of inequality that remains an unnoticed issue hindering social change.

Finally, the moral aspect of gender inequality is a widely ignored aspect in social psychological research that future studies must address. The present thesis provided theoretical insights into how this issue could be approached by recognizing the ambivalent and complementary nature of cooperative gender beliefs. For example, cooperative gender beliefs also assign *moral* values to female roles indicating that relationship-oriented and caring roles are women's moral obligations (Bianchi et al., 2000; Lachance-Grzela & Bouchard, 2010; Thompson, 1991). To illustrate, benevolent sexism prescribes that women have greater moral sensibility and purity than men, as long as those women follow traditional roles (see Glick & Fiske, 1996). Similarly, in common religious ideology, women are described as morally responsible for the wellbeing of the family (e.g., Ellison & Bartkowski, 2002; Ozorak, 1996). Thus, assigning moral traits to women is one aspect of how cooperative gender beliefs feeds into people's positive images of themselves while also upholding the status quo (see Jost et al., 2003). In this sense, if women comply with the unequal system, they acquire an extra personal benefit of an identity involving integrity and morality. Men also benefit through ceding greater morality to *obedient* women, but not to *disobedient* women, because these beliefs uphold an ideological structure in which women are exclusively characterized in a positive light when they accept the status quo (Glick & Fiske, 1996). Future research, thus, should investigate how embedding morality into cooperative gender beliefs maintains people's positive self-images *and* defends the legitimacy and positive image of the system.

Conclusion

Gender inequality is unique amongst all forms of inequalities because it affects half of the human population, interweaves societal relations between men and women and their intimate relationships. This thesis was motivated by the desire to understand the unique importance of cooperative gender beliefs in managing the costs and benefits of gender inequalities. Cooperative gender beliefs portray women and men as a unit with complementary traits, qualities and roles and thereby establish, justify and enforce unequal gender relations, while simultaneously conferring subtle and subjective benefits. I conducted a research program aimed at exploring how cooperative gender beliefs relate to people's time allocation to traditionally female and male roles; to biological benefits; and psychological benefits. As demonstrated in this thesis, there are different types of cooperative gender beliefs that overlap in their content and function of promoting traditional male and female roles, however, they only appear to predict time allocated to traditionally female roles (Study 1). Cooperative gender beliefs have also been assumed to function to facilitate a high fertility mating strategy for both men and women, however, they rather seem to function as justification for inequalities that new parents experience (Study 2). The justifying function of cooperative gender beliefs operates both at the individual level and at the societal level to mitigate men's and women's perceptions of injustice, however, they only confer palliative psychological benefits for women (Study 3). By assessing the types, functions and levels of how these cooperative gender beliefs help people manage the cost and benefits of gender inequalities, I hope to both communicate current developments in the social psychological science of gender inequality and also offer a clearer picture of how cooperative gender beliefs are used to offset some of the harm that inequality creates for women.

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