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Kiwi dads at play: what influences fathers' childcare involvement in New Zealand?

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ABSTRACT

Fathers' involvement in childcare plays a critical role in promoting gender equality in caregiving, supporting children's development, and enhancing men's own well-being. Yet, in many countries – including New Zealand – mothers still bear a disproportionate share of childcare responsibilities, contributing to what is known as the gender care gap. This paper examines what drives variation in paternal involvement in early childcare, using data from the Growing Up in New Zealand (GUiNZ) birth cohort. We identify key factors that help and hinder fathers' engagement, such as job-related constraints, household income dynamics, and personality traits. Importantly, the analysis shows that leave-taking and daily involvement are shaped by different drivers, with, for example, conscientious fathers being more involved in daily care while simultaneously being less likely to take paternity leave. This research contributes to a more nuanced understanding of what shapes fathers' roles in caregiving, with implications for families, employers, and policymakers.

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1. Introduction

In recent years, there has been growing international attention among academics and policymakers on paternal involvement in childcare as a key factor in promoting more equitable caregiving arrangements, improving children's outcomes, and supporting men's own well-being and work-life balance. Numerous international studies have focussed on the difference between mothers' and fathers' involvement in domestic duties, commonly known as the 'gender care gap' (Bianchi, 2000; Cunningham, 2007; Hook, 2010; Samtleben, 2019; Sanchez & Thomas, 1997). This gap is evident in nearly all developed countries and persists despite increases in female labour force participation. It potentially has important consequences for gender equality, as it is likely an underlying driver of gender differences in labour force participation, career advancement, occupational choice and wage rates following the birth of the first child – often summarised as the 'motherhood penality' (Anderson, Binder, & Krause, 2002; Budig & England, 2001; Dixon, 2000; Gangl & Ziefle, 2009; Gough

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& Noonan, 2013; Sin, Dasgupta, & Pacheco, 2018; Stats NZ, 2017; Wilner, 2016). This care gap is not only a barrier to gender equality but also limits children's access to both parents and narrows the potential for a more balanced distribution of work and family responsibilities across genders.

This pattern is also evident in New Zealand (NZ). In 2020, the employment rate among NZ men was 72.8% versus 62.8% for women. As in other developed countries, gender gaps in labour market outcomes are larger among parents than non-parents (Dixon, 2000; Stats NZ, 2017). Estimates from Sin *et al.* (2018) confirm that parenthood widens employment and earnings gaps between men and women in NZ. OECD data indicate that these differences are also rooted in differences in the time spent in unpaid work by men and women. Nevertheless, the OECD data also shows that NZ is among only five OECD countries with a negative gender difference in total work, i.e. Kiwi men, on average, spend more time per day engaged in any form of work (paid or unpaid) than women. This negative gender work gap in NZ is driven by a relatively large difference in the time spent in paid work (OECD, 2021). Callister (2005) argues that this creates a 'double burden' for NZ fathers, who balance significant amounts of paid and unpaid work. This pattern may reflect an interesting dynamic behind the observed gender care gap in NZ. Unlike in many other OECD countries, where intra-household gender norms have been observed to be the main driver of unequal domestic workloads, the labour market (with its unequal opportunities and constraints for men and women) appears to play a bigger role in NZ.

Despite this, there is little NZ research on fathers' involvement in domestic duties. One relevant study by the Families Commission, based on a representative survey of fathers, provides a general overview of fathers' involvement, parenting styles and role models (Luketina, Davidson, & Palmer, 2009). Consistent with OECD data, it finds that work commitments and time pressures are the most common barrier to fathers' involvement in their children's care in NZ. This paper contributes to the limited research in this space by empirically analysing what influences fathers' involvement in their children's upbringing in NZ. It uses data from the Growing Up in New Zealand (GUiNZ) survey, a contemporary birth cohort study. This survey tracks children born in 2009–2010 from the antenatal period through their childhood and adolescence. It collects data not only on the children and their mothers, but also regularly surveys their fathers.

The aim of the paper is to identify the characteristics associated with a higher likelihood of fathers taking leave, being involved in childcare, and providing high-quality care. This is done by estimating conditional associations between fathers' reported engagement and their individual characteristics, with a focus on labour market factors and psychological traits.

We find that fathers with greater work commitments are less likely to take leave and are also less involved in the day-to-day care of their children. Additionally, job substitutability (the ease with which someone else can take over their role), which tends to be low for self-employed fathers, plays an important role. A larger income gap between mothers and fathers decreases fathers' involvement and the quality of their care, but does not affect leave-taking when other factors are controlled for.

Interestingly, while conscientious fathers are less likely to take leave, they spend significantly more time on daily childcare. Regarding care quality, highly educated, extroverted, and open fathers are more likely to engage in high-quality care activities. However, larger

income differences between the mother and father and full-time employment are linked to lower quality care provided by fathers.

This paper summarises findings from a research project funded by the Ministry of Social Development (MSD). A preprint version of this paper was published as Hennecke, Meehan, Pacheco, and Turcu (2022). This preprint full report also provides a detailed analysis of the consequences of paternal involvement for children's cognitive and non-cognitive development. Although this research was exploratory, it offered useful insights into how different levels of paternal engagement in a child's early years might influence outcomes.

We did not find a clear link between the amount of paternal leave taken and children's developmental outcomes. However, there appears to be a positive relationship between fathers' involvement in day-to-day care, as well as the quality of care they provide, and the children's psychological outcomes. This suggests that further analysis of paternal involvement could yield important insights.

2. Literature

For a long time, the economic literature on gender care gaps has concentrated on economic factors within households as the main driver of household division of labour. This stream of research is largely based on Gary Becker's model of intra-household specialisation (Becker, 1981). Becker's theory suggests that household members specialise according to their comparative advantages, which are determined by relative human capital levels. As a result, decisions about who takes leave are driven by relative income, with the lower earner typically taking on more domestic duties.

International data show that, even 40 years after Becker's work, much of household decision making can still be explained by this theory (Blau & Kahn, 2007, 2017; Heim, 2007; Juhn & Murphy, 1997). As Bertrand, Pan, and Kamenica (2015) highlight, it is still uncommon for women to be the primary earners. Married women have lower employment rates, are more likely to work part-time, and earn less than their partners.[1] Hennecke and Pape (2022) find that when fathers lose their jobs, they temporarily spend more time caring for children and doing housework, while outsourcing of tasks (like childcare) decreases. However, this change is short-lived, and fathers' involvement returns to previous levels (or lower) once they re-enter the workforce.

Findings from economic, sociological and management literature additionally suggest an important role of company policies, workplace culture and workplace support among employers and coworkers (Allen, 2012; Birkett & Forbes, 2019; Brandth & Kvande, 2019; Bygren & Duvander, 2006; Samtleben, 2019). Studies show that workplace support among employers and coworkers is often inextricably linked with the prevailing social norms within a firm. For example, Dahl, Løken, and Mogstad (2014) found strong peer effects in the take-up rates of parental leave among male coworkers, in addition to those observed in the family network.

In recent years, sociological research has pointed to traditional gender roles as a key factor driving the gender care gap. Seminal work by Bertrand *et al.* (2015) found that women who earn more than their partners are more likely to spend additional time on household chores. The authors take this as evidence supporting identity theory, as described by Akerlof and Kranton (2000). According to this theory, deviating from social expectations for one's gender is costly.

Internationally, much of the debate and literature on the gender division of domestic duties has been dominated by consideration of 'daddy months' in national parental leave schemes. Empirical evidence on the effect of daddy months on fathers' leave taking and childcare involvement is very mixed. Most studies do find that the introduction of daddy months increases fathers' leave taking (Bartel, Rossin-Slater, Ruhm, Stearns, & Waldfogel, 2018; Cools, Fiva, & Kirkebøen, 2015; Ekberg, Eriksson, & Friebel, 2013; Patnaik, 2019). It also promotes a more even household division of labour (Kotsadam & Finseraas, 2011; Tamm, 2019; Tanaka & Waldfogel, 2007) as well as supporting mothers' relative income and labour force attachment (Druedahl, Ejrnæs, & Jørgensen, 2019; Farré & González, 2019). On the other hand, the international literature is still sceptical about whether daddy months are the right way to promote a more equal division of childcare. This is driven by the observation that, in most countries, fathers' parental leave take-up is still largely restricted to the earmarked time and only very rarely exceeds one or two months (Eriksson, 2005; Samtleben, Schaeper, & Wrohlich, 2019). Many studies also find that the gender care gap and the persistent traditional allocation of parents' labour supply remained largely unaffected by these reforms (Cools *et al.*, 2015; Ekberg *et al.*, 2013).

Additionally, in line with the early motivation of these policies, the increase in fathers' involvement due to the introduction of earmarked leave also has a positive effect on children's development as measured, for example, by school performance (Cools *et al.*, 2015; El Nokali, Bachman, & Votruba-Drzal, 2010; Mangiavacchi, Piccoli, & Pieroni, 2021).

3. Political background

In NZ, unpaid and government-paid parental leave (PPL) is governed by the Parental Leave and Employment Protection Act 1987 and its amendments. When the children in our sample were born in 2009–2010, eligible mothers were entitled to up to 12 months of unpaid job-protected leave and 14 weeks of government-funded PPL. Since then, the length of PPL has been gradually increased, reaching 26 weeks in July 2020. However, the payment amount for PPL has remained the same in relative terms since it was introduced in 2002. Mothers receive either their pre-leave pay or an amount approximately equivalent to the full-time minimum wage ($$429.74 per week in July 2009), whichever is lower.

OECD data shows that in 2009, around the time the children in our sample were born, the length of NZ's PPL was one of the shortest in the OECD and payment levels were comparably low. On average, maternity leave benefits across OECD economies replace approximately 77% of previous earnings for a mother with average full-time earnings; whereas NZ replaces less than 50% of gross earnings (OECD, 2021).

Using GUiNZ data, Noy and Sin (2021) found that mothers took an average of 53 weeks of leave. However, mothers who were working antenatally would have preferred to take 69 weeks of parental leave, with 70% taking less leave than they would have liked.

While parental leave entitlements sit with the mother, she can transfer all or part of her entitlements to her spouse or de facto partner. However, this rarely happens, with the uptake of PPL by fathers being less than 1% (Morrissey, 2020). Additionally, NZ fathers who have been employed continuously for 12 months are entitled to two weeks of unpaid partner leave. Yet, uptake is also low, with only about 4% of fathers using this unpaid

leave (Reilly & Morrissey, 2017). OECD (2021) shows that NZ was one of just six OECD countries with PPL that do not have dedicated paid paternal leave.

Parental leave is only one of a set of factors that could influence how parents choose to divide their time between work within and outside the home. Indeed, there is a wide range of policy settings that can influence fathers' involvement, not to mention a wider set of non-policy factors such as cultural norms. One policy setting that is particularly relevant in the NZ context is childcare costs. For children under the age of three, childcare is generally not subsidised except for qualifying low-income families. As a result, NZ has one of the highest out-of-pocket childcare costs in the OECD (OECD, 2022). The high effective marginal tax rate of returning to work that high childcare costs imply may reinforce traditional gender specialisation within households.

4. Data

4.1. Growing up in New Zealand

The data for our analysis comes from the Growing Up in NZ survey (GUiNZ), the country's largest contemporary longitudinal study of child development. It is funded by the Ministry of Social Development and conducted by a team at the University of Auckland (Morton *et al.*, 2010, 2013).

The survey follows over 6000 children born in the Auckland, Waikato, and Counties-Manukau regions in 2009–2010, along with their families. Pregnant women were recruited based on their expected delivery date (April 2009 – April 2010) such that they are roughly representative of all families in the NZ population during that time in terms of ethnic diversity and socio-economic status (Morton *et al.*, 2010, 2013).

The survey follows the children and their families from pregnancy onwards, resulting in 15 interviews over the past 15 years, including with eight major data collection waves (DCWs): antenatal (DCW0), 9-month (DCW1), 2-year (DCW2), 31-month (DCW3), 45-month (DCW4), 54-month (DCW5), 6-year (DCW6), 8-year (DCW8) and 12-year (NWA12) (Growing Up in New Zealand, 2024).

In most cases the mother is the primary respondent, especially during the early years when the children were too young to respond themselves. Mothers completed their own questionnaires and, at 2 years (DCW2), also filled out a proxy questionnaire on behalf of their child. In the antenatal interview, as well as the interviews at 9 months (9m), 2 years (2y) and 12 years, the mother's partner completed an additional questionnaire.

According to Growing Up in New Zealand (2017), at the age of 6 years, 97% of these partners are the biological fathers of the child and 93% live in the same household. However, the term 'fathers' used in this study includes co-mothers (due to a lack of observed gender for the mother's partner) as well as stepfathers. In line with Growing Up in New Zealand (2017), the focus is on the presence of a family member who takes on a fathering role, rather than their gender. In this study, 'fathers' are defined as the second parental figure living in the household alongside the mother. The possibility of linking fathers to their children is one of the distinct features of GUiNZ. Longitudinal studies of children in NZ have typically not included fathers in the past (Pryor, Morton, Bandara, Robinson, & Grant, 2014).

The father's questionnaire mirrors the mother's and collects personal information, details about their relationship with the child and the child's mother, and responses about the child. Thus, for early DCWs, two versions of child-related information are often available – one from the mother and one from the father. Unless stated otherwise, we primarily use the child's information given by the mother in order to (1) avoid missing information for families in which no partner is observed and (2) reduce endogeneity of the information with respect to the father's involvement.

4.2. Estimation sample

We construct our estimation sample to ensure the use of a balanced and homogeneous sample throughout the analysis. We construct a child-based sample, i.e. families of twins are included in the sample twice. We start with the full GUiNZ dataset of 6853 children. First, we drop 714 children (and their mothers) who were not observed in at least one of the first three waves (antenatal, 9m, 2y). Secondly, we drop all families with missing key demographic information (including the father's demographics in the cases where fathers are observed) which reduces the sample by around a quarter (1604 observations). Thirdly, we drop 92 children of single mothers based on their partnership status, i.e. mothers who indicated in the antenatal questionnaire that they did not have a partner.[2]

Out of the 4443 children remaining in the full sample, roughly three-quarters (3369) had mothers with partners in the household who agreed to participate in GUiNZ and who were thus surveyed in the antenatal interview. In a final data-cleaning step, we drop 271 children whose fathers did not participate in later interviews (either 9m or 2y). This leaves a final sample of 3098 children with the same father figure in their first two years of life, who also consistently participated in GUiNZ.[3] When analysing determinants of leave taking in a later step, the sample is further restricted to employed fathers, reducing the number of observations to 2539.[4]

Table 1 gives an overview of the characteristics of the children in our sample and their households. At birth, 40% of the children had no siblings, 37% had one older sibling and 23% had more than one. In 81% of the households, the parents were the only adults, while 19% of households included other adults, such as extended family members. At the age of two, 41% of the GUiNZ children were not in any external care, while 38% were in a type of early childhood education (ECE) facility and another 7% were in home-based care. The other 14% were cared for in private settings. The average household income of the families in our sample was relatively high, with 71% of families having incomes of NZ$$70,000 or more per year and only 4% having incomes of less than NZ$$30,000.

Table 2 also gives detailed summary statistics of the mothers and fathers in our sample. Most parents are in their peak reproductive years, with 59% of mothers and 52% of fathers aged between 25 and 34 years. More than two-thirds of parents were born in NZ (69% of fathers and 68% of mothers). In terms of their ethnicity, 65% (66%) of fathers (mothers) are NZ European, 13% (12%) Māori, 8% (7%) Pacific peoples, 11% (13%) Asian and another 2% (3%) MELAA or another ethnicity.

Mothers are, on average, better educated than fathers in the sample, with 53% of mothers but only 40% of fathers having a bachelor's or higher degree. Employment rates also differ: 83% of fathers are employed at the time of the antenatal interview, compared with 61%

Table 1. Summary statistics – children and households (antenatal).

Variable	Categories	Household mean
Child's characteristics		
Twin		0.03
Girl		0.49
Planned pregnancy		0.75
Subjective health (9m)	Excellent	0.62
	Very good	0.27
	Good	0.08
	Fair or Poor	0.03
Developmental problem (9m)		0.10
External care (2y)	None	0.41
	Early childhood education facility	0.38
	Home-based care	0.07
	Nanny	0.04
	Grandparents or other relatives	0.08
	Other	0.02
Household characteristics		
Married		0.75
Cohabiting		0.99
Number of siblings	None	0.40
	One	0.37
	Two	0.15
	Three	0.05
	Four or more	0.03
Youngest sibling under 5		0.45
Youngest sibling under 2		0.12
Extended Family		0.19
Household Income	Less than 20 k	0.01
	20–30 k	0.03
	30–50 k	0.10
	50–70 k	0.15
	70–100 k	0.25
	100–150 k	0.27
	More than 150 k	0.19
Income difference to mother (in $$000s)		2.69
Biological father		0.99
Observations		3098

Source: Authors' calculations based on GUiNZ DCW0, DCW2 and 16-month interview.All variables are sourced from the antenatal questionnaire (DCW0) unless indicated otherwise: 9m – 9-month interview (DCW1); 2y – 2-year interview (DCW2).

of mothers. A higher share of mothers are not in the labour force (26%) compared with fathers (1%).

Table A.2 in the Supplementary Material provides more detailed summary statistics on the fathers in our sample. Among them, 84% of fathers are employed full time, 20% are self-employed and 20% do shift work. The share of fathers who work more than 40 hours per week is relatively high (60%). Regarding parenting, nearly all fathers view being a parent as an important part of their identity (98%), 86% feel confident in their parenting and 81% believe that they are a better than average parent.

4.3. Childcare involvement

We use three measures to assess childcare involvement, distinguishing between leave-taking, the amount of care provided, and the quality of care.

Table 2. Summary statistics – mothers and fathers (antenatal).

Variable	Categories	Father mean	Mother mean
Parent characteristics			
Age	< 25 years	0.05	0.14
	25–29 years	0.19	0.24
	30–34 years	0.33	0.35
	35–39 years	0.28	0.23
	40+ years	0.15	0.04
Education	No secondary school qualification	0.05	0.04
	Secondary school/NCEA 1–4	0.18	0.21
	Diploma/Trade cert/NCEA 5–6	0.37	0.30
	Bachelor's degree	0.21	0.26
	Higher degree	0.19	0.19
Occupation	Not employed	0.17	0.39
	Managers	0.18	0.07
	Professionals	0.29	0.30
	Clerical and Administrative	0.16	0.02
	Technicians and Trades	0.03	0.04
	Machinery Operators and Drivers	0.04	0.12
	Community and Personal Service	0.04	0.04
	Sales	0.05	0.00
	Labourers	0.05	0.02
Not born in NZ		0.31	0.31
Prioritized ethnicity	NZ European	0.65	0.66
	Māori	0.13	0.12
	Pacific peoples	0.08	0.07
	Asian	0.11	0.13
	MELAA and Other	0.02	0.03
Observations		3098	3098

Source: Authors' calculations based on GUiNZ DCW0, DCW2 and 16-month interview.
Notes: 'MELAA' is Middle Eastern, Latin American, Asian. All variables are sourced from the antenatal questionaire (DCW0). Table A.2 in the Supplementary Material provides more detailed summary statistics on the fathers in our sample.

4.3.1. Parental leave taking

The first measure of paternal involvement follows existing literature by examining paternal leave-taking. Since leave-taking applies only to employed fathers, the sample is reduced to 2539 households.

Figure 1 provides an overview of parental leave taken by employed fathers. It includes the actual leave taking as reported in the 9-month interview (DCW1), as well as the reported preferred and anticipated leave taking from the antenatal interview (DCW0). The left bar illustrates leave preferences, where all employed fathers expressed a desire to take some leave. Among them, 63% preferred to take more than two weeks, and 14% wanted to take more than 3 months. However, 9% anticipated taking no leave at all, and for 57% of the sample, anticipated leave was shorter than their preferred amount.

The right bar shows actual leave taken. In 30% of cases, fathers took less leave than anticipated and 14% did not take any leave. Among those who did take leave, most took annual leave (i.e. paid holiday leave; 54%) with an average of 2.22 weeks taken. About 28% of fathers took an average of 2.22 weeks of other forms of paid leave and 22% took unpaid leave (average of 2.78 weeks).[5]

Table 3 presents fathers' responses to why their anticipated leave was shorter than preferred (antenatal), as well as reasons for not taking any leave (9m). The most common reason for taking no or shorter leave is professional or work commitments, cited by 36%

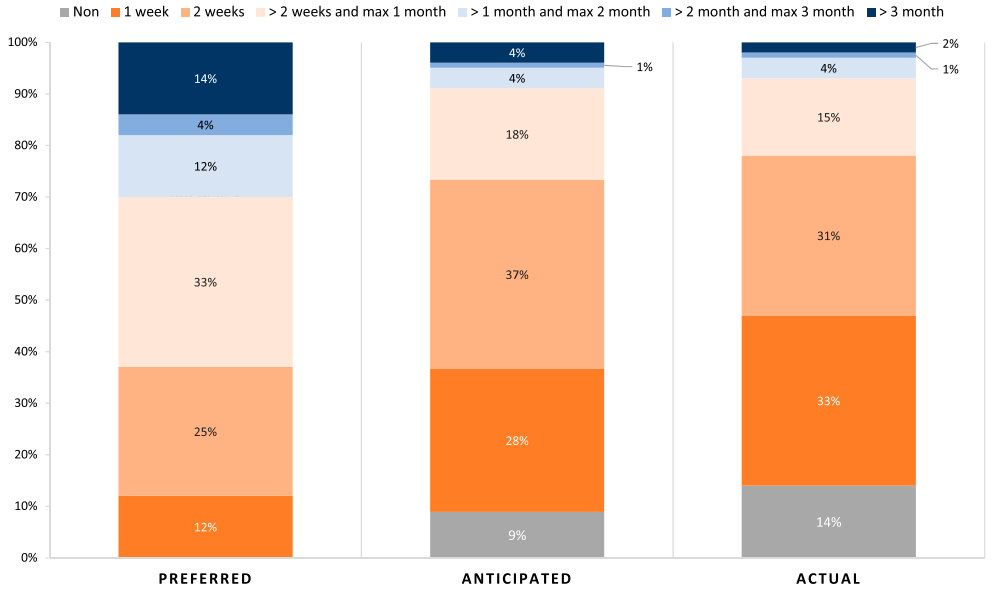

Figure 1. Paternal leave taking among employed fathers ($N = 2539$).

Source: Authors' calculations and illustration based on GUiNZ DCW0 and DCW1. Notes: Preferred and anticipated leave taking are reported in the antenatal interview, actual leave taking is captured in the 9-month interview.

Table 3. Reasons fathers took no or a shorter period of parental leave.

Reason why …	…anticipated shorter than preferred	…no actual leave
Financial reasons	25%	16%
Government regulations	4%	2%
Company or employer regulations	13%	4%
Professional or work commitments	47%	36%
Parenting preferences	4%	10%
Resigned or made redundant		5%
Flexible work arranged		3%
Self employed		13%
Other	6%	12%
Observations	1770	450

Source: Authors' calculations based on GUiNZ DCW0 and DCW1. Notes: Information from column (1) is taken from the antenatal interview, information in column 2 from the 9-month interview.

and 47% of fathers, respectively. Financial reasons follow, accounting for 16% and 25%. Parenting preferences (e.g. the mother wanting to take all leave) were less common, mentioned by only 4% and 10% of fathers.

4.3.2. Amount of care

Figure 2 gives an overview of self-reported measures of the amount of childcare involvement. The two main outcome variables are the self-reported frequency of involvement in the child's day-to-day care (upper graph) and the self-reported frequency of direct responsibility for the child, i.e. in sole care of the child (lower graph). Both are measured on a scale

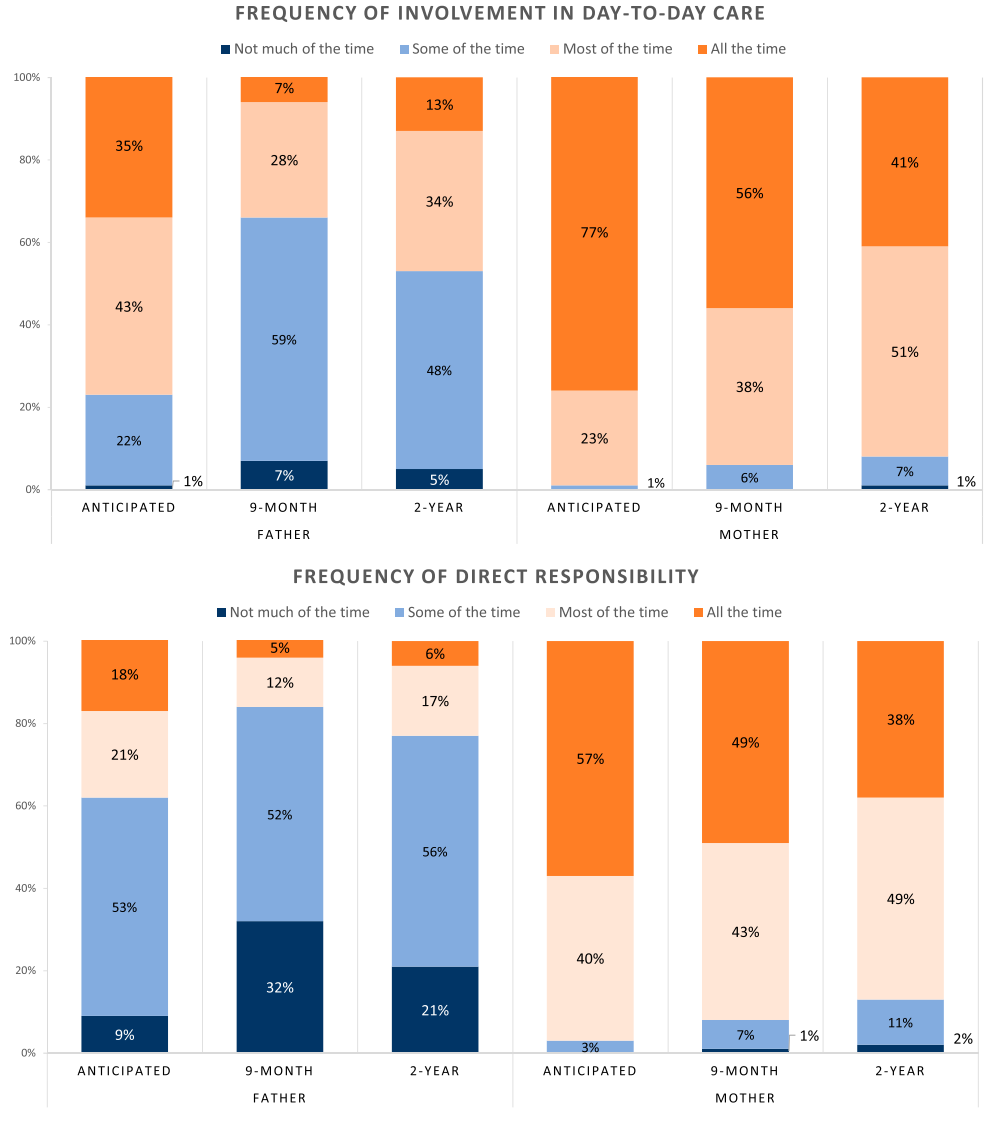

Figure 2. Descriptive statistics on the amount of care.

Source: Authors' calculations and illustration based on GUiNZ DCW0, DCW1 and DCW2. Notes: Anticipated involvement is measured in the antenatal interview.

from 1 (Not much of the time) to 4 (All the time). The figure shows anticipated involvement (antenatal) as well as actual involvement at 9 months and 2 years, with data available for both fathers and mothers.

The figure shows that fathers are much less involved than mothers. During the first two years of the child's life, more fathers report being involved 'some of the time' rather than 'most of the time.' The gap is even larger when looking at direct responsibility for the child. Only 5% of fathers at 9 months and 6% at 2 years report being directly responsible 'all the time'.

In contrast, 32% (21%) of fathers at 9 months (2 years) report being directly responsible 'not much of the time'. Very few mothers (1% at 9 months and and 2% at 2 years) report having little to no direct responsibility.

Figure 2 also shows that fathers strongly overestimate their anticipated involvement in day-to-day care and direct responsibility in childcare during (at least) the first two years after birth. In the antenatal interview, 78% of fathers anticipated that they would be involved in the day-to-day care of their child at least 'most of the time'. However, only 35% reported this level of involvement at 9 months, and 47% at 2 years.

Interestingly, mothers also overestimate their anticipated involvement in day-to-day care and direct responsibility, but to a lesser extent than fathers. Given that both parents overestimate their involvement, it is possible that part of this finding is due to the wording of the questions. Mothers and fathers were asked about 'the plans you and your partner may have about being involved with your baby after they are born', without a time frame being specified. This may have led parents to think about the period immediately after birth, rather than when the child is 9 months or 2 years old, contributing to the overestimation.

Given these strong differences in childcare involvement between mothers and fathers, we examine their satisfaction with this division by analysing responses from the 2-year interview. Participants were asked whether they perceived the current division of childcare and housework to be fair. Despite being less involved, 71% of fathers view the distribution of responsibilities in childcare as fair, compared with only 56% of mothers. Agreement between partners is lower, with just 42% agreeing on a fair distribution, and 11% acknowledging that the mother does more than her fair share. Thus, it appears that fathers not only take on fewer childcare tasks, they are generally more satisfied with this arrangement than mothers.

4.3.3. Quality of care

Table 4 summarises the measures of activities that parents engage in with their child. These activities include playing games, playing with toys, telling stories/singing songs and reading books. Both fathers and mothers report how often they engage in these activities, with responses categorised into 'seldom or never', 'at least once a week', 'once a day' and 'several times a day'. A higher frequency of these activities is used as a proxy for higher 'quality of care'. Playing games and playing with toys are only reported in the 9-month interview, while telling stories/singing songs as well as reading books are reported in both the 9-month and the 2-year interviews, allowing for a dynamic perspective.

In general, fathers are less engaged in the activities reported in Table 4, compared to mothers. Fathers are less likely to report daily participation in these activities than mothers especially in the 9-month interview. Interestingly, engaging once a day is more common among fathers while the majority of mothers engage in most activities several times a day, supporting the idea of the fathers being the storytellers and entertainers in the evenings after work.

In line with the findings on involvement in the previous section, the gap in involvement between mothers and fathers decreases as the children age. In particular, the share of fathers who read books to their children once a day or more increases. It is worth noting that very

Table 4. Descriptive statistics of quality of care.

	Father		Mother	
	9m	2y	9m	2y
Playing games				
Seldom or Never	0.01		0.01	
At least once a week	0.19		0.12	
Once a day	0.26		0.19	
Several times a day	0.54		0.68	
Playing with toys				
Seldom or Never	0.01		0.00	
At least once a week	0.16		0.04	
Once a day	0.24		0.11	
Several times a day	0.58		0.84	
Telling stories/singing songs				
Seldom or Never	0.14	0.38	0.03	0.34
At least once a week	0.36	0.50	0.15	0.46
Once a day	0.25	0.10	0.28	0.14
Several times a day	0.25	0.02	0.54	0.05
Reading books				
Seldom or Never	0.36	0.10	0.13	0.03
At least once a week	0.40	0.40	0.31	0.22
Once a day	0.19	0.31	0.37	0.28
Several times a day	0.05	0.20	0.20	0.47

Source: Authors' calculations based on GUiNZ DCW1 and DCW2.

few fathers report 'seldom or never' playing with toys or games with their children. Nearly all fathers report playing with their children at least once a week.

5. Determinants of childcare involvement

5.1. Empirical strategy

For our analysis, we focus on three main outcome variables based on the different involvement measures discussed above. To ensure comparability across models, we measure involvement on all three dimensions using standardised continuous variables:

- **Leave** – A standardised continuous variable for the number of weeks a father took any type of leave in the first 9 months.
- **Amount** – A standardised continuous variable for the sum of the direct-responsibility-weighted involvement at 9 months and 2 years. This measure is calculated by multiplying the categorical variable for a father's involvement (shown in Figure 2) by the categorical variable for the father's direct responsibility for both 9 m and 2 y, adding the two measures and standardising it.[6]
- **Quality** – A standardised continuous variable for the sum of all categorical quality-of-care measures in 9m and 2y (as shown in Table 4).

As leave taking is only observed for employed fathers, the estimation sample differs between this model and the other two. In order to not introduce unnecessary sample selection issues into the model, we refrain from reducing the sample to employed fathers for all outcome variables. We nevertheless check the robustness of the findings on involvement

and quality with respect to this sample restriction and find no noteworthy differences (see Table A.8 in the Supplementary Material).

We use ordinary least squares regressions (OLS) as our key method to estimate the following model:

$$Y_i = \beta_1 + \beta_2 F_i + \beta_3 HH_i + \beta_4 C_i + \beta_5 M_i + \epsilon_i \quad (1)$$

where Y_i is the outcome variable from the list above for father *i*. The explanatory variables on father's socio-economic, demographic and psychological characteristics (F_i) cover the following domains:

- Socio-demographic characteristics: Biological father; age; criminal history 9m; migration status; ethnicity; education;
- Economic characteristics: employment status/occupation; income differences between mother and father; shiftwork 9m; self-employment 2y; working hours 9m;
- Psychological and emotional characteristics: mental health diagnosis; physical health diagnosis; subjective health; Big Five personality traits; perceived stress scale; perceived helpfulness of family; perceived relationship quality.

The choice of explanatory variables is guided by the availability of information in GUiNZ as well as previous theoretical and empirical research on important determinants of fathers' involvement (see Section 2.)

In addition, we control for a large set of characteristics of the household (HH_i), the mother (M_i) and the child (C_i):

- Household characteristics (HH_i): marital status of parents; number of siblings; indicators for young siblings (under 5 and under 2); household type; household income;.
- Mother's socio-economic and demographic characteristics (M_i): age, migration status; education;
- Child's characteristics (C_i): twin birth; gender; planned pregnancy; subjective health; developmental problems.

Unless otherwise indicated, all explanatory variables (except the child characteristics) are observed in the antenatal interview to avoid endogeneity in the later estimation models due to reverse causality. A detailed list of the explanatory variables, including definitions are provided in Table A.3 in the Supplementary Material.

We also analyse the role of additional psycho-social characteristics of the fathers (FSP_i) in the parental context. These include perceived work-life balance 9 m, perceived parental influence 9m, parental identity 2y, parental confidence 9m, subjective parental quality 2y, and parental satisfaction 9m using the following model:

$$Y_i = \beta_1 + \beta_2 F_i + \beta_2 FSP_i + \beta_3 HH_i + + \beta_4 C_i + \beta_5 M_i + \epsilon_i \quad (2)$$

Nevertheless, these variables are highly endogenous and can potentially explain important relationships between the explanatory and outcome variables and should not be treated as confounders. These variables are thus not included in the main estimation models but are discussed separately in Section 2).

To access the robustness of our findings with respect to the definitions of the outcome variables, we test variations in the definition of parental leave take-up, amount of care and childcare quality. Instead of using standardised continuous variables, we generate multiple different indicators. We measure parental leave take-up with two indicators for (1) long leave (more than 2 weeks) and (2) any leave. Secondly, we measure amount of care with four indicators for (3) involvement at least most of the time at 9 months, (4) direct responsibility at least most if the time at 9 months, (5) involvement at least most of the time at 2 years and (6) direct responsibility at least most of the time at 2 years. Lastly, we measure childcare quality with (7) an indicator for a better-than-median quality of care, (8) an indicator for daily playing (games or with toys) at 9 months as well as (9) an indicator for daily reading/telling stories at 2 years. All models are estimated with a linear probability model in order to ensure comparability to the estimates using continuous dependent variables:

$$P(Y_i = 1) = P(\beta_1 + \beta_2 F_i + \beta_3 HH_i + \beta_4 C_i + \beta_5 M_i + \epsilon_i > 0) \tag{3}$$

5.1.1. Limitations

It is important to acknowledge the limitations of our estimation model before interpreting the key findings in the following section.

First, the findings presented are based on a survey of a selected sample of fathers whose socio-economic characteristics may not be representative of the entire NZ population. For instance, Morton *et al.* (2013) show that GUiNZ mothers are, on average, older than the NZ population and non-European mothers are oversampled. The selectivity of the sample of families with fathers participating in GUiNZ can be seen in Table A.1 in the Supplementary Material. In addition to household characteristics, it is highly likely that fathers' characteristics also determine who participates in the survey. For example, we might expect that more conscientious fathers are more likely to take part while less conscientious fathers are more likely to drop out. Thus, it should be kept in mind that the results on paternal involvement, engagement and children's outcomes relate to fathers who participated in GUiNZ rather than being representative of the overall population of NZ families.

Secondly, and very much in line with the first point, survey data are subject to measurement errors, including, for example, conscious and unconscious misreporting. For instance, the findings about the fairness of the division of tasks presented above suggest that self-reported levels of involvement are likely overestimated, due to the subjective nature of the rating.

The final and most important limitation concerns the causal interpretation of the findings. Due to a lack of clear exogenous variation in the factors influencing involvement, these results do not represent causal relationships. Rather, these findings represent the relationship between family and father characteristics and paternal involvement. Nevertheless, our findings provide a foundation for future research to leverage exogenous variation to identify causal effects.

5.2. Results

Table 5 summarises the estimation results on fathers' characteristics of the full estimation model in line with Equation (1) for all three main outcome variables. Estimation results for all other control variables as well as models in which explanatory variables are included in

a stepwise fashion are reported in Tables A.5 (leave), A.6 (involvement) and A.7 (quality) in the Supplementary Material.[7]

5.2.1. Leave taking

Column (1) of Table 5 summarises the estimation results of the full model (including all explanatory variables specified in Equation (1)). The dependent variable is the standardised continuous variable based on the weeks of leave taken until the 9-month interview. Given that leave taking is only observed for fathers who indicate they are employed prior to birth, Equation (1) is estimated for the subsample of 2539 employed fathers.

First, we observe that paternal leave taking is more strongly associated with labour market characteristics than with socio-demographic factors. While in the unconditional setting, we still observed a significant positive association of leave taking with not being the biological father, and father's education, none of the socio-demographic characteristics have a statistically significant association with leave taking in the full model. However, economic characteristics are associated with leave taking. For example, self-employed and full-time employed fathers take shorter periods of leave. Both being self-employed and working full time reduce the weeks of leave taken by fathers by approximately 16% of a standard deviation).This is in line with the known connection between the internal substitutability of leave-takers within firms and parental leave length (Huebener, Jessen, Kuehnle, & Oberfichtner, 2024). Self-employed fathers, in particular, are likely to consider the challenges of substituting their own work. Additional significant negative associations of overtime and management positions with weeks of leave in the unconditional setting are not robust against the inclusion of the full set of explanatory variables.

Nevertheless, given the potential for non-linearity in the relationship, when looking at binary indicators for leave-taking as alternative outcome variables (columns (1) and (2) of Table A.9 in the Supplementary Material), the picture becomes clearer. Managers, who are harder to substitute internally, have a 7.3 percentage point lower probability of taking long leave as well as a 4.5 percentage points higher probability of taking no leave compared with professionals and administrative workers. Fathers working in shifts are, on average, less likely to take leave, but if they do, they are more likely to take long leave, potentially driven by shift work being more common in routine jobs, which have better substitutability.

Additionally, when concentrating on the binary indicators, we again observe a positive association between education level and both any leave taking and long leave.

In terms of personality traits, conscientiousness stands out as it is negatively associated with the number of weeks of leave taken as well as the probability of taking any leave or more than two weeks of leave in the fully controlled model. A one-point increase on the conscientiousness scale decreases fathers' leave taking by 7.5% of a standard deviation. This may reflect a heightened sense of workplace responsibility, where concerns about the impact of leave on the firm influence the decision to take less leave. Conversely, fathers with higher openness take, on average, more weeks of leave while extroverted fathers are less likely to take leave at all.

The father's rating of the relationship quality with the mother is positively associated with leave taking. This suggests two potential mechanisms, which we cannot distinguish between: (1) fathers with healthy relationships with the mothers are more likely to be involved, and/or (2) fathers' involvement is good for the relationship between the mother and father.

Table 5. Estimation results – father's characteristics.

	Leave		Amount		Quality	
Variables	Coefficient	Std. Error	Coefficient	Std. Error	Coefficient	Std. Error
Father's socio-demographic characteristics						
Biological father	−0.384	(0.255)	−0.269	(0.197)	−0.239	(0.204)
Age (Ref: < 25 years)						
25–29 years	0.062	(0.122)	0.116	(0.091)	0.046	(0.094)
30–34 years	0.059	(0.126)	0.128	(0.095)	0.036	(0.098)
35–39 years	0.080	(0.131)	0.176*	(0.099)	0.024	(0.103)
40+ years	0.119	(0.137)	0.283***	(0.105)	0.047	(0.109)
Criminal history	−0.052	(0.178)	−0.056	(0.132)	−0.282**	(0.137)
Not born in NZ	0.050	(0.054)	0.168***	(0.044)	0.007	(0.046)
Ethnicity (Ref: NZ European)						
Māori	0.075	(0.066)	0.206***	(0.052)	0.050	(0.053)
Pacific peoples	−0.025	(0.087)	0.467***	(0.068)	0.130*	(0.071)
Asian	0.017	(0.081)	0.221***	(0.066)	−0.168**	(0.069)
MELAA and other	−0.100	(0.156)	0.294**	(0.115)	−0.217*	(0.119)
Education (Ref: No sec qualification)						
Sec school/NCEA 1–4	0.060	(0.109)	−0.143*	(0.083)	0.200**	(0.086)
Diploma/Trade cert/NCEA 5–6	0.167	(0.104)	−0.225***	(0.079)	0.089	(0.082)
Bachelor's degree	0.157	(0.114)	−0.315***	(0.088)	0.165*	(0.091)
Higher degree	0.186	(0.118)	−0.322***	(0.091)	0.235**	(0.094)
Father's economic characteristics						
Occupation (Ref: Professionals/Admin Workers)						
Not employed			0.079	(0.052)	0.004	(0.054)
Managers	−0.070	(0.056)	−0.009	(0.049)	−0.059	(0.050)
Technicians/Trades Workers/Machinery Operators	0.105*	(0.061)	0.112**	(0.052)	−0.144***	(0.053)
Other	0.096	(0.068)	0.115*	(0.059)	0.019	(0.061)
Income difference to mother (in $$000s)	−0.003	(0.005)	−0.041***	(0.004)	−0.016***	(0.004)
Shiftwork (9m)	0.064	(0.051)	0.108***	(0.041)	0.004	(0.042)
Self-employed (2y)	−0.154***	(0.051)	−0.160***	(0.042)	−0.002	(0.043)
Fulltime (9m)	−0.164**	(0.071)	−0.331***	(0.054)	−0.301***	(0.056)
Overtime (9m)	−0.045	(0.048)	−0.177***	(0.040)	−0.011	(0.041)
Father's psychological characteristics						
Mental health	0.004	(0.069)	−0.108**	(0.054)	−0.005	(0.056)
Physical health	0.038	(0.043)	−0.049	(0.035)	0.015	(0.036)
Subjective health	−0.102	(0.066)	0.014	(0.051)	0.089*	(0.053)
Big Five						
Extraversion	−0.045	(0.030)	0.033	(0.024)	0.074***	(0.025)
Agreeableness	−0.060	(0.041)	0.023	(0.032)	0.056*	(0.034)
Conscientiousness	−0.075**	(0.036)	0.109***	(0.029)	0.020	(0.030)
Neuroticism	−0.028	(0.039)	0.020	(0.031)	0.033	(0.032)
Openness	0.072*	(0.039)	0.071**	(0.031)	0.204***	(0.032)
Perceived stress scale	0.014	(0.027)	0.047**	(0.022)	0.023	(0.022)
Perceived relationship quality	0.050**	(0.024)	0.081***	(0.019)	0.104***	(0.020)
Perceived family helpfulness	−0.042*	(0.022)	0.078***	(0.017)	0.075***	(0.018)
HH_i	✓		✓		✓	
C_i	✓		✓		✓	
M_i	✓		✓		✓	
Observations	2539		3098		3098	
R-squared	0.048		0.242		0.188	

Source: Authors' calculations based on GUiNZ DCW0, DCW1 and DCW2.

Notes: * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$ Explanatory variables are sourced from the antenatal questionaire (DCW0) unless specified otherwise: 9 m – 9-month interview (DCW1), 2 y – 2-year interview (DCW2). Full estimation results for all control variables as well as models in which explanatory variables are included in a stepwise fashion are reported in Table A.5 (leave), A.6 (amount) and A.7 (quality) in the Supplementary Material.

Looking at all other control variables (see Table A.5), we additionally find that the more children already in the household, the shorter is the average length of leave a father takes. For instance, fathers of four or more children are, on average, 13.6 percentage points less likely to take long leave. However, having twins increases the likelihood of taking more than two weeks of leave by 21.5 percentage points.

5.2.2. Amount of care

Column (2) of Table 5 summarises the estimation results of the full model for the continuous measure of direct-responsibility-weighted involvement in day-to-day childcare tasks at the ages of 9 months and 2 years.

Firstly, a few interesting patterns can be observed when comparing the univariate associations in column (2) of Table A.4 and the results of the fully controlled model, highlighting the importance of collinearities in the amount of paternal childcare. We see, for example, a positive association between having a criminal history and the amount of paternal childcare while older fathers are, on average, observed to perform significantly less childcare. In both cases, the sign changes if we add all other control variables into the model, indicating that the associations with criminal history and age might be explained by, for example, employment status and occupational characteristics (i.e. more/less time-demanding jobs).

When comparing the determinants of a high amount of childcare to those of leaving-taking, both similarities and differences emerge. Factors related to workload, such as self-employment, full-time employment, and overtime, negatively affect both the amount of paternal childcare and leave-taking.

However, several other factors show either new associations or opposite effects, highlighting key differences between leave-taking and the amount of paternal childcare.

Most strikingly, we identify an interesting pattern with respect to conscientiousness and higher levels of education. While conscientiousness is negatively associated with taking more than two weeks leave, it is positively associated with high childcare involvement. Conscientious fathers may feel a dual sense of responsibility to both their workplace and their children, leading them to take on relatively more paid and unpaid work. In contrast, higher education shows an opposite pattern: it is positively (though not significantly) associated with leave-taking but significantly negatively associated with childcare involvement.

Cohabitation, which had no significant effect on taking leave,is negatively associated with paternal childcare involvement at both 9 months and 2 years (see columns (3) and (5) of Table A.9 in the Online Appendix). This may reflect shared custody arrangements, where fathers not living with the mother take on more direct responsibility when the child is in their household.

In line with the findings on leave taking, we again see a positive association between perceived relationship quality and the amount of paternal childcare. Additionally, the perceived helpfulness of the family also shows a positive association with the amount of childcare, underscoring the importance of strong family relationships in fostering paternal engagement.

Table 5 highlights the critical role of income differences between fathers and mothers in explaining fathers' involvement in day-to-day childcare. Even after controlling for work- and education-related factors, a greater income difference (with the father earning more) is associated with a lower likelihood of paternal childcare involvement.

There are also interesting patterns by ethnicity. While ethnicity had no effect on leave-taking behaviour, NZ European fathers are, on average, less likely to have high childcare involvement compared to all other ethnicities.

Looking at all other control variables (see Table A.6), the negative association between the number of children and leave-taking does not hold for childcare involvement. In fact, having three other children in the household is significantly positively associated with fathers' involvement. This suggests that the negative relationship in leave-taking may stem from financial reasons for low levels of paternal leave taking in large families or long-term household divisions of labour. For example, in households with multiple children, mothers are often already not employed or working reduced hours, making them more likely to take the majority of leave when a new child arrives.

5.2.3. Quality of care

The final outcome of interest in Column (3) of Table 5 is the measure of quality of care based on non-routine caregiving activities. Interestingly, some of the findings follow a different pattern than those discussed above with respect to quantity of care.

First, while conscientiousness was an important determinant of the quantity of childcare, quality of care is positively associated with paternal personality traits of extraversion, agreeableness and openness. Openness, in particular, is associated with a higher average probability of, for example, daily play (at age 9 months) and daily reading or storytelling (at age 2 years), as well as a higher average score on the continuous quality scale. Additionally, higher educational attainment is positively associated with more high-quality activities (while the association with quantity of care was negative). For example, fathers with higher than a Bachelor's degree are, on average, 12.6 percentage points more likely to provide above-median quality care. As shown in the results in Table A.9, this effect is particularly evident in the higher higher share of fathers who engage in daily reading at 2 years, while the likelihood of daily playing at 9 months old is not higher on average. Fathers with a Bachelor's degree or higher are, on average, 16-21 percentage points more likely to read to their 2 year-old children on a daily basis compared to fathers without a secondary school qualification.

Ethnicity also plays a role. Pasifika fathers are more likely to provide both more high quality activities and greater quantity of care. Nevertheless, this does not translate into a higher probability of daily playing or reading. The picture is less clear for fathers of Asian or other ethnicities, as there is a negative association with quality of care (also observed in lower probabilities of daily reading at 2 years) while the association with quantity of care is positive. Lastly, while it did not play a role for quantity of care, fathers with a criminal history provide, on average, lower levels of care quality, although this is not reflected in lower probabilities of daily play or reading.

Workload factors, such as full-time employment, again negatively affect paternal involvement via quality of care. For example, full-time employed fathers are, on average, 5-6 percentage points less likely to play or read to their children on a daily basis. Similarly, relationship quality between the mother and the father is positively associated with more high quality activities performed by the father. Again, the data does not enable us to disentangle the direction of causation between these variables, but the effects likely go in both directions. A positive association is also observed between the amount of father's high quality activities and perceived family helpfulness.

Looking at all other control variables (see Table A.7), the likelihood of fathers providing high-quality care activities decreases as the number of siblings in the household increases, especially with respect to daily reading at the age of 2 years.

5.3. Psycho-social characteristics as mechanisms

In further analysis, we include additional psycho-social characteristics of fathers in the estimation model, as specified in Equation (2). The results are presented in column (4) of Tables A.5, A.6 and A.7 in the Supplementary Material.

The findings reveal that perceived influence, parental confidence, perceptions of being a good parent and parental satisfaction are strongly positively associated with a high amount of childcare (Table A.6) and high-quality care (Table A.7). However, these factors show no statistically significant relationship with leave taking (Table A.5).

Notably, controlling for these psycho-social characteristics reduces the magnitude of the effects of personality traits on paternal involvement in terms of both quantity and quality. This suggests that these characteristics may play a mediating role. A father's personality influences his emotional response to becoming a father (e.g. parental confidence and self-efficacy), which indirectly affects his level of involvement.

6. Leave taking as a proxy for involvement

An important question raised in prior literature is whether leave-taking is a good proxy for paternal involvement in childcare. Specifically, does observed paternal leave-taking accurately represent fathers' day-to-day involvement, quality of care and overall engagement?

This is an important issue because, due to the lack of available measures of direct involvement, leave-taking is frequently used as a proxy measure for paternal engagement. Drawing conclusions about the drivers and consequences of paternal involvement based on leave-taking thus crucially depends on the assumption that those who take longer leave are more involved relative to those who take shorter leave.

However, the findings discussed above – particularly regarding the personality traits of involved fathers – suggest that leave-taking may not fully capture the nuances of paternal involvement. For example, conscientiousness is negatively associated with leave-taking but positively associated with day-to-day involvement, indicating that leave-taking alone may provide an incomplete picture of paternal engagement.

The advantage of the GUiNZ data is that we are able to observe both measures of involvement and leave-taking and derive statistical relationships between them. Table 6 summarises the results of a mean equality test for the direct-responsibility-weighted amount of involvement and quality of care by leave-taking (i.e. whether the father took any leave and, if so, whether it exceeded two weeks.

The results suggest that leave-taking is not a perfect proxy for paternal involvement. As expected, quality of care is significantly higher among fathers who took leave and slightly higher still for those who took more than two weeks of leave. However, involvement in day-to-day care shows an unexpected pattern. It is lowest among fathers who took only a short period of leave, but significantly higher in both the group who took no leave and the group who took more than two weeks.

Table 6. Leave taking and amount of childcare.

	Any leave taking		Long leave taking (if any)	
	No	Yes	2 weeks or less	More than 2 weeks
Amount of Care	10.91	9.90***	9.70	10.47***
Quality of Care	11.78	12.48***	12.38	12.79**
Observations	**362**	**2177**	**1624**	**553**

Source: Authors' calculations based on GUiNZ DCW0, DCW1 and DCW2.
Notes: * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Two possible explanations for this finding emerge. First, paternal leave-taking may be a poor proxy for paternal involvement because they are influenced by different determinants. This highlights the value of time-use data for understanding shifts in cultural gender norms, which are not easily captured by administrative data on parental leave.

Second, these results may reflect the generally low levels of leave taking in NZ, where external constraints limit fathers' ability to take leave, making observed behaviour a less accurate indicator of intrinsic leave-taking preferences. This may also reduce the comparability of these findings to international research, since leave periods in NZ are shorter. Nonetheless, even in countries with earmarked paternity leave, the average duration rarely exceeds one or two months (Ekberg *et al.*, 2013; Samtleben, 2019).

7. Conclusion

This study used rich data from the Growing Up in New Zealand (GUiNZ) study to provide a detailed picture of NZ fathers' involvement in their children's early years. The data allowed us to gain an overview of different levels and forms of engagement observed with respect to parental leave-taking, direct involvement in day-to-day care and activity indicators as proxies for quality of care.

Fathers were found to be distinctly less involved than mothers, although their involvement levels did increase between when the child was age 9 months and 2 years old. Interestingly, fathers strongly overestimate their anticipated involvement and direct responsibility in childcare during antenatal interviews. A similar overestimation was observed for quality-of-care activities. Regarding leave-taking, over half of the employed sample anticipated taking a shorter period of leave than they preferred, and actual leave taken was often even shorter than anticipated.

We then explored the internal and external factors driving differences in paternal engagement. Unsurprisingly, a high amount of paternal childcare was strongly associated with occupational factors such as internal substitutionability within firms (e.g. occupation, self-employment, full-time work). Additionally, greater income differences between parents reduced the likelihood of high paternal involvement, suggesting bargaining power dynamics influence the division of unpaid labour, even after controlling for work- and education-related factors.

A novel contribution of this research was to delve into psycho-social characteristics and personality traits as mechanisms of paternal involvement. Conscientiousness, for instance, was linked to lower levels of leave-taking but higher day-to-day care involvement. Extraversion and openness were positively associated with the likelihood of providing high-quality care.

Lastly, we found that paternal leave taking is not a particularly good proxy for actual involvement of fathers, especially when opportunities to take paid leave are restricted. The relationship between leave-taking and direct involvement is neither linear nor monotonic, as illustrated by opposing associations for conscientiousness. Few studies have compared the characteristics of leave-taking and involved fathers due to a lack of data measuring both dimensions, but our findings highlight key differences between these groups. Our study, thus, not only contributes to the understanding of the childcare involvement of fathers in New Zealand but also adds knowledge to the international literature on the measurement of fathers' childcare involvement. It thus provides new insights into the behavioural determinants of involvement and the constraints fathers face.

In conclusion, our findings underscore the importance of distinguishing between different forms of paternal involvement and recognising that leave-taking is only one aspect of engagement. Occupational constraints and household income dynamics remain key barriers to equitable caregiving, but so too do less visible psychological and social factors. Importantly, the benefits of increased paternal involvement extend beyond reducing the gender care gap: children benefit from closer relationships with both parents, and fathers themselves report greater satisfaction and identity fulfilment when actively engaged in childcare. As such, our study contributes to a broader conversation about how societies and workplaces can better support fathers in caregiving roles, not just as a path to gender equality, but as a benefit to families and communities more generally.

Notes

1. From an observed discontinuity in the distribution of the share of total spousal income earned by the wife, Bertrand *et al.* (2015) infer that a male-breadwinning norm exists. This finding nevertheless has been criticised by for example the work by Binder and Lam (2022),who find that the distribution can mainly be explained by marriage market outcomes.
2. Mothers who separate from the antenatal partner at a later point in time and for whom we thus potentially observe a corresponding 'father' are kept in the data and their family status is captured with an indicator for cohabitation.
3. At least 42% of fathers who drop out between the antenatal phase and the 2 y interview do so because of a separation with the mother (i.e. the mother reports having no partner at 2 y). To assess the representativeness of the estimation sample, we compare characteristics of families with participating vs. non-participating partners in the first three DCWs. These descriptives and t-test results are provided in Table A.1 in the Supplementary Material.
4. A sensitivity check in Table A.8 of the Supplementary Material tests the comparability of results between the full sample and the employed fathers-only sample for other outcome variables.
5. We cannot split out paid leave into governmental paid and employer paid. However, we know from other sources that the take up of governmental paid leave by fathers is extremely low (less than 1%) (Morrissey, 2020).
6. For example, a father who reports being involved 'all the time' but has direct responsibility 'not much of the time' would receive a score of 4 (4∗1). Similarly, a father who reports being involved 'not much of the time' but has full direct responsibility 'all the time' when involved would also receive a score of 4 (1∗4).
7. In order to get a better understanding of the underlying direct associations, before running the full models, we computed the univariate assocations between all explanatory variables from the main model and all three outcome variables. Table A.4 in the Online Appendix gives an overview over these unconditional correlations.

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