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# The Impact of Teleworking on Women's Work–Life Balance and Life Satisfaction: a Longitudinal Study from Singapore

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**Abstract**
As teleworking gains widespread global acceptance as a prevalent work arrangement, it is crucial to understand its implications for life satisfaction. Despite the increasing adoption of teleworking, few studies have examined the specific mechanisms through which it influences life satisfaction. This study used data on 358 married Singaporean women spanning six waves from 2018 to 2022, and applied path analysis to explore the effects of teleworking on life satisfaction mediated by work–life balance, workplace relationships, and working hours. The findings suggest a positive association between teleworking and life satisfaction, with work–life balance as a mediating factor. Although teleworking is associated with worsened workplace relationships and decreased working hours, the mediating effects of these factors on life satisfaction are not significant. Organizations should consider the potential benefits of teleworking for work–life balance and life satisfaction while also weighing its drawbacks.

**Keywords** Teleworking · Work-family balance · Life satisfaction · Working women · Singapore

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## Introduction

The adoption of teleworking practices is rising exponentially. Teleworking, also referred to as remote work or telecommuting, describes working from a location outside the traditional office setting, typically a home office facilitated by technology (Belanger et al., 2001; Wang & Haggerty, 2011). Teleworking before the pandemic was constrained by organizational concerns regarding the loss of supervisory control and reduced productivity due to limited face time (Allen et al., 2015). It was also once considered exclusive to certain sectors. However, in the wake of the pandemic, teleworking has now become commonplace across industries, with a higher baseline of employees working from home (Haan, 2023). As teleworking becomes more ubiquitous, it is critical to investigate its impact on individual life satisfaction. This will shape policies and practices that promote a healthy work–life balance, support mental health, and facilitate remote work arrangements to harness the potential benefits of this evolving work arrangement for individuals and organizations.

Among high-income regions, countries in Asia seem to bear the highest burden of work-related stress and long working hours. This is especially evident in a heavily market-oriented economy such as Singapore, where the working week often extends beyond the average of 43 h, with overtime reaching up to 72 h per month (International Labour Organization, 2023). The prevalent practice of long working hours and continuous full-time service has made work the central aspect of life for many. However, excessive working hours may affect the immediate health of individuals and their families and has consequences for future health due to the spillover effects on overall quality of life (Hammer et al., 2005; Wilensky, 1960). On the other hand, having a good work–life balance can benefit various aspects of individual well-being and performance, including life satisfaction (Haar et al., 2014), work fulfillment (Russell, 2008), and improved resilience to work-related challenges (Luthans, 2002). As telework has been touted as a solution to long work hours and work–life balance, it is imperative to investigate how teleworking arrangements relate to life satisfaction.

During the COVID-19 pandemic, teleworking gained considerable popularity as a viable alternative work arrangement. It has been a marker of organizational adaptability and flexibility, a trait that has only intensified in recent times (Graham et al., 2023). Large-scale implementation of teleworking took place to ensure the continuity of business operations and employee health and safety under lockdown or movement restrictions (Margherita & Heikkilä, 2021). Although the spread of teleworking has been substantial, some organizations have also rolled back the extent of teleworking arrangements. This study aims to contribute insights on the costs and benefits of teleworking, which will inform organizations' search for an optimal working arrangement.

An important question arising from this "new normal" is how teleworking relates to employee well-being. Previous studies have suggested that teleworking is linked to improved life satisfaction because it provides individuals with the flexibility to choose when and where they work (Anderson et al., 2015; Carillo et al., 2021), which, in turn, enhances personal autonomy and control (Kortsch et al., 2022). Teleworking can also help workers balance their family and work life. Further, the time saved from eliminating commuting and its associated stress can be used for rejuvenation or activ-

ities such as exercise, promoting good health (Kossek et al., 2006). However, it is worth noting that pre-pandemic studies often focused on specific occupations that are more compatible with teleworking practices. These studies may not have captured individuals across the full spectrum of jobs and industries, which potentially limits the breadth of insights into the broader applicability and challenges of teleworking.

The relationship between teleworking and life satisfaction remains somewhat equivocal. Not all employees who telework experience increased life satisfaction. Teleworking can result in blurred boundaries between work and personal life, with employees feeling pressure to be "always on," potentially causing fatigue and burnout (Windeler et al., 2017). Such negative health effects are especially evident when teleworking occurs outside of employees' regular working hours (Yang et al., 2023). Teleworking is also linked with a heightened risk of loneliness and social isolation because it reduces opportunities for social interaction with colleagues, potentially diminishing workplace familiarity and camaraderie (Allen et al., 2015; Bloom et al., 2015; Graham et al., 2023). It may also have negative career consequences due to flexibility stigma, where teleworkers are perceived as less committed and less productive in the workplace (Williams et al., 2013; Goldin, 2014; Chung, 2020).

Notably, researchers have observed a gendered pattern in the relationship between teleworking and well-being, with men experiencing greater health benefits than women (Arntz et al., 2020; Denzer & Grunau, 2023; Laß & Wooden, 2023). Conventional gender norms tend to associate women with household labor and child-centered caregiving (Blair-Loy, 2003; Townsend, 2002). These norms are reflected in how women adjust their time use and labor market involvement in response to household dynamics such as caregiving requirements (Bianchi, 2000). Teleworking women often find themselves more involved in unpaid childcare and household labor 'by default,' due to entrenched gendered structural and cultural norms that ascribe women a greater share of domestic responsibilities despite their professional commitments (Calarco et al., 2021; Lyttelton et al., 2022; Wang & Cheng, 2023). Although married women often bear a higher burden in caring for families while working, less is known about their well-being while teleworking. Given the consequences of teleworking for women, our study specifically targets married women to explore the impact of teleworking on their life satisfaction.

This study aimed to adopt a more holistic lens to estimate the complex pathways of models that explore the influence of telework on the life satisfaction of married women during and after the COVID-19 pandemic within an empirical framework. Although previous research has examined these factors individually, a notable gap exists in studies evaluating all three mechanisms concurrently in a single structural model. To achieve this, we collected and analyzed longitudinal data from Singapore, a high-income economy characterized by increased professionalization and active promotion of mental health to improve worker welfare (Mahirah et al., 2020). It is projected that two-thirds of Singaporeans will be in white-collar jobs by 2030 (Cheam, 2013), and mental well-being in workplaces remains a key priority for the government (Singapore Ministry of Manpower, 2023). In this context, it becomes particularly important to develop a better understanding of teleworking and its impact on employee well-being. To do so, we tested the direct and indirect effects

of telework arrangements on life satisfaction through work–life balance, workplace relationships, and working hours pathways.

## Theoretical Background

In many advanced economies, including Singapore, teleworking has seen a rise in popularity as a means of improving employee well-being. However, the link between teleworking and employee well-being is not straightforward. Previous literature has suggested the existence of a "teleworking paradox" with potentially conflicting outcomes for employee life satisfaction (Bellmann & Hübler, 2021). Although some theoretical arguments suggest that teleworking can lead to reduced work–family conflict and improved well-being, others raise concerns regarding potential negative consequences, such as social isolation and career stagnation (Back-Wiklund et al., 2011). In this section, we discuss previous studies' varied theoretical predictions regarding how teleworking may impact employee life satisfaction through multiple pathways.

### Integration and Segmentation of Work–Family Borders

The work–family border theory (Clark, 2000) and boundary theory (Ashforth et al., 2000) propose that integrating work and family through teleworking can facilitate fluid movement between the two domains. However, in the absence of a clear separation between them (e.g., a temporal boundary imposed by a long commute), managing these boundaries may require greater effort.

On one hand, teleworking may lead to heightened multitasking and blurred boundaries, resulting in the expansion the work sphere rather than contraction of it (Chung & van der Lippe, 2020). Employees may feel compelled to reciprocate the flexibility their employers provide by investing additional time and effort in work (Lott, 2018). The blurring of boundaries between work and family life may also encourage individuals to work more intensely or for longer periods than they otherwise would (Kelliher & Anderson, 2010). These practices may thus exacerbate work–family conflict, as the demands of paid work encroach and spill over into family life. Previous work (Qiu & Fan, 2015) has demonstrated the deleterious effects of mutual interference between work and family roles on employees' mental health and life satisfaction.

On the other hand, teleworking can improve work–life balance by providing individuals with increased flexibility to adapt their work schedules to their personal and family responsibilities. According to the work–family border theory, teleworking increases the permeability of physical, temporal, and psychological borders between work and family life (Clark, 2000) by erasing the traditional separation found in office settings. In turn, this allows employees to adjust boundaries to avoid or mitigate potential conflicts (Clark, 2000; Raghuram & Wiesenfeld, 2004). It also impacts psychological boundaries by allowing a more natural flow between work and personal life, thus reducing stress that results from strict segregation of these domains. Moreover, teleworking allows for temporal flexibility, enabling individuals to address productivity peaks and personal needs concurrently. This is particularly beneficial when fixed working hours clash with family schedules, such as school pick-up times

(Chung & van der Lippe, 2020). To the extent that teleworking offers greater flexibility, it may enable some mothers to remain in their jobs (Goldin, 2014; Ishizuka & Musick, 2021). For employees with long commutes, teleworking provides additional time for childcare and work. By allowing better management of work and home schedules, teleworking can help employees address challenges that arise from work–life incompatibility, which in turn, has a positive effect on life satisfaction (Kossek & Ozeki, 1998).

#### Workplace Relational Amelioration or Deterioration

In terms of workplace interpersonal dynamics, person–environment fit theory (French, 1973) suggests that individuals who feel drained by constant face-to-face interactions may find teleworking beneficial, as it provides space and time for reflection. Without the constant need for social interaction, in addition to routine work duties, employees can focus solely on their assigned tasks. Moreover, the reduction of physical meetings and hierarchical structures can mitigate burnout and improve life satisfaction (Meymandpour & Bagheri, 2017).

However, teleworking may also have negative implications for life satisfaction due to its detrimental effects on workplace relationships. Extensive teleworking limits opportunities for face-to-face interactions in the workplace and inhibits job-related feedback and informal mentoring (Golden & Veiga, 2005). The mere exposure effect hypothesis (Zajonc, 1968) suggests that reduced exposure to colleagues, as well as less frequent and less rich communication between workers, may diminish familiarity and trust. Although new technologies (e.g., video conferencing) are available, their social and technological functions cannot replicate the experience of working together on site (Straus & McGrath, 1994; Shapiro et al., 2002). Researchers have observed that strategies to improve connectivity among remote employees, such as using online platforms to facilitate communication and collaboration, can preserve a sense of community (Graham et al., 2023). However, most studies suggest that limited face time for remote workers causes a deterioration of workplace relationships, which may negatively impact life satisfaction (Gajendran & Harrison, 2007; Golden, 2006).

#### Work Schedule Autonomy

In relation to work schedule autonomy, a notable positive effect of teleworking on life satisfaction relates to an increased sense of psychological control and autonomy over one's work hours (Glass & Estes, 1997; Hill et al., 2010; Kelly et al., 2011). Remote employees tend to have more control than office-based workers regarding when and how they complete specific job tasks (Spector, 1986). By eliminating commuting time and tailoring their job schedule, individuals may reduce their work hours and enjoy additional nonwork time (Chesley & Flood, 2017), allowing them to engage in other activities (Kurowska, 2020). Alternatively, they might choose to dedicate more time to work or extend their working hours to advance their careers (Lott & Chung, 2016). Although constraints persist in many telework arrangements (e.g., adhering to core work hours or weekly workload), the ability to manage working hours may

enable individuals to adjust their schedules to accommodate their productivity and personal needs.

Collectively, these pathways suggest that teleworking can be a double-edged sword, with both positive and negative outcomes (Gajendran & Harrison, 2007). On one hand, teleworking may lead to reduced work–family conflict and increased autonomy, resulting in improved life satisfaction. On the other, teleworking might negatively impact work relationships and hinder career progression. Despite growing consensus on the effects of teleworking on each of the aforementioned mechanisms, no single, overarching empirical framework relates them to overall life satisfaction.

## Aims and Hypotheses

Drawing on the above theoretical discussions, we synthesize these perspectives within an empirical framework to examine how the association between teleworking and improved life satisfaction can be explained by factors such as work–life balance, workplace relationships, and hours worked. Although previous research has examined these factors individually, a notable gap exists in studies evaluating all three mechanisms concurrently in a single structural model. By integrating collecting and analyzing data collected from working women in Singapore, this study sought to test this framework and answer three fundamental questions: (1) Do teleworking arrangements have direct or indirect positive or negative consequences on life satisfaction? (2) Which mechanisms underlie the effects of teleworking? (3) Which mechanism exerts the strongest effect on life satisfaction? We tested six hypotheses as follows.

Despite concerns that teleworking blurs the borders between different life domains, making it challenging for individuals to psychologically disengage from work (Sullivan & Lewis, 2001), this can largely be countered by increased flexibility. Teleworking can assist employees in regulating and synchronizing their work and family demands, potentially reducing work–family conflict (Gajendran & Harrison, 2007). Teleworking also reduces or eliminates commuting time, resulting in more time for family activities. Therefore, our first hypothesis is:

**Hypothesis 1A** Teleworking is positively related to work–life balance.

A good work–life balance is positively related to life satisfaction because it reduces strain and conflict between roles (Greenhaus et al., 2003). Marks and MacDermid's (1996) role-balance model suggests that individuals who approach their role-related responsibilities with even-handed alertness create a positive balance and derive satisfaction from their combined roles. Being able to flexibly negotiate one's life roles contributes to improved life satisfaction (Clark, 2000; Marks & MacDermid, 1996).

**Hypothesis 1B** Teleworking's positive effects on individual life satisfaction are mediated by improvements in work–life balance.

Face-to-face interactions with colleagues offer valuable access to informal networks and create opportunities for unexpected exchanges. Being physically close to cowork-

ers facilitates the development and maintenance of deep relationships (Graham et al., 2023). By reducing these interactions, teleworking may disrupt the connection with peers (Golden, 2006). Physical distance can become psychological distance, potentially resulting in telecommuters being "out of sight, out of mind" and perceived as not actively working toward shared goals (McCloskey & Igbaria, 2003).

**Hypothesis 2A** Teleworking is negatively related to relationships with colleagues.

A decline in workplace relationships may negatively impact life satisfaction by reducing available social support (Gross & John, 2003). High-quality workplace relationships can be a protective buffer against the impact of work-related stress and strains (Häuberer, 2011), enabling individuals to better navigate their daily challenges (Harris & Kacmar, 2006). Human needs for relatedness and belonging are crucial for life satisfaction (Deci & Ryan, 1991). Close colleague relationships contribute to fulfilling these fundamental needs. Hence, arrangements that negatively impact workplace relationships are likely to reduce life satisfaction (Cooper & Kurland, 2002).

**Hypothesis 2B** Teleworking's negative effects on individual life satisfaction are mediated by poorer relationship quality with colleagues.

Teleworkers generally experience a heightened sense of autonomy because they are both physically and psychologically distanced from face-to-face supervision (Beckel & Fisher, 2022). A prevalent assumption is that flexibility in work location not only increases self-reliance in scheduling tasks but also enhances control over how they are completed, which could increase efficiency, reduce working hours, and enhance perceived autonomy (Kossek et al., 2006). Working from home also provides control over breaks and flexibility to choose the most productive hours of work, which may contribute to potential reductions in overall work hours.

**Hypothesis 3A** Teleworking is associated with a reduction in work hours.

Work hours are expected to influence employees' life satisfaction, with its impact contingent on whether workplace or home pressures are prioritized (Abendroth & Reimann, 2018; Capitano & Greenhaus, 2018). Success at work might depend on prioritizing work over home matters (Kossek et al., 2001), with those who prioritize work using teleworking to extend their working hours (Dockery & Bawa, 2014). This could cause higher stress and reduced life satisfaction (Greenhaus et al., 2003). Conversely, those who allocate more time and involvement to their family relative to work experience lower work pressure and life stress (Greenhaus et al., 2003; Kossek et al., 2001). Therefore, control over work timing, assessed here by hours worked, was expected to positively influence life satisfaction.

**Hypothesis 3B** Teleworking's positive effects on individual life satisfaction are mediated by reduced work hours.

## Methods

### Participants

We collected data from 660 participants over six waves between 2018 and 2022. The inclusion criteria specified that participants had to be married, aged 25–34 in 2018, either Singaporean or married to a Singaporean, and able to speak, read, and write English. The baseline wave of data was collected between April and July 2018 using a street-intercept survey of Singapore's five main geographic regions (Central, East, North, Northeast, and West). Follow-up online surveys were conducted semi-annually in May 2020, November–December 2020, May–June 2021, November 2021, and May 2022, throughout the COVID-19 pandemic. Of 3,038 individuals initially approached, 660 (21.7%) met the inclusion criteria and were recruited, 558 (18.4%) did not meet the criteria, and 1,820 (59.9%) declined to participate. Among the 660 individuals recruited, 194 did not have any follow-up observations, 81 were not employed during the study period, and 27 did not provide responses to the outcome variable, leaving an analytic sample of 358. To provide nationally representative estimates, sampling weights were constructed to match the age, race, and educational distribution of married female residents in this age group, using data from the Singapore Department of Statistics 2015 General Household Survey. Ethical approval for the survey was obtained from the Institutional Review Board at the National University of Singapore.

### Measures

Individual well-being was assessed by overall life satisfaction. Respondents were asked to rate their overall life satisfaction ("Overall, how satisfied are you with your life?") on a five-point scale from 1 ("very dissatisfied") to 5 ("very satisfied)". Based on previous empirical evidence (Cheung & Lucas, 2014; Lucas & Donnellan, 2012), single-item life satisfaction measures may be equivalent to multiple-item measures in validity and reliability while also reducing participant burden.

The single exogenous variable was teleworking status, measured on a five-point scale: 1 indicating "I work only from home", 2 for "I work mostly from home", 3 for "I work half from home and half outside home", 4 for "I work mostly outside of home", and 5 for "I work only outside of home". The variable was recoded such that numerically higher values indicated increased teleworking.

Three endogenous variables were included in our analysis, with each corresponding to one of the three hypothesized mechanisms relating respondents' telework status to individual life satisfaction. Changes in work–life balance and relationships with colleagues were each measured based on women's self-reports, with responses given on a five-point scale ranging from "much worse" to "much better" in comparison to before April 2020. The variables were coded such that numerically higher values indicated improvements in work–life balance and workplace relationships. We note that no universally accepted definition or measurement exists for these concepts (Avadhani & Menon, 2022). The third measure was self-reported total hours worked per week, including teleworking and non-teleworking hours.

We controlled for several demographic and socioeconomic factors that might influence teleworking and work–life balance. These included respondents' age (in years), occupation (professional or nonprofessional), monthly income (in SGD), change in marital status from the previous wave (still married or divorced), ethnicity (Chinese or non-Chinese), education (below university or university and above), length of marriage (in years), number of children, and survey wave. Occupational status was determined by directly asking respondents to identify their occupation (i.e., "What is your occupation?"). We then classified them according to the International Standard Classification of Occupations (ISCO), which closely aligns with the Singapore Standard Occupational Classification. These classification systems assign skill levels to various occupations (on a scale from 1 to 4). Professionals (e.g., managers and professionals) were defined as individuals at skill level 4. Nonprofessionals (e.g., technicians, associate professionals, clerical support workers, service and sales workers, and other elementary occupations) were those at skill level 3 and below. In addition, we conducted sensitivity analyses with four occupation categories—professionals, associate professionals and technicians, clerical support workers, and service, sales, and other elementary occupations—which yielded similar findings.

### Analytic Strategy

The analyses were conducted using a multilevel structural equation modeling framework (Muthén & Asparouhouv, 2008) to account for the panel data structure with repeated observations for each individual across survey waves. The model included direct and indirect paths from respondents' telework status to their overall life satisfaction via work–life balance, workplace relationships, and hours worked. Telework status was incorporated as a lagged predictor to establish a temporal order between the predictor and outcomes.

We used standard goodness-of-fit indices including a comparative fit index (CFI) of $\geq 0.90$, a Tucker–Lewis index (TLI) of $\geq 0.90$, a root mean square error of approximation (RMSEA) of $< 0.05$, a standardized root mean square residual (SRMR) of $< 0.05$, and a chi-squared value to evaluate our models (Klem, 2000). We report the standardized coefficients (β) for continuous predictors (telework, work–life balance, workplace relationships, and hours worked) and outcome (overall life satisfaction) to facilitate interpretation.

All estimates were adjusted using sample weights. Data cleaning and descriptive analyses were conducted using Stata 17, and path models were estimated using Mplus 8.3 (Muthén & Muthén, 2017). We excluded observations for the waves when respondents were not employed and used full information maximum likelihood estimation with robust standard errors to address missing data. Individuals were included as long as they had data on teleworking for at least two time points. Attrition rates were approximately 15% in wave 2 ($n = 53$), 23% in wave 3 ($n = 83$), 30% in wave 4 ($n = 114$), 20% in wave 5 ($n = 77$), and 20% in wave 6 ($n = 77$). Individuals lost to attrition were more likely to work slightly fewer hours than those in the analytic sample, to work exclusively outside of the home, to be in a nonprofessional occupation, to have an ethnicity other than Chinese, and to have attained education below university level (see Appendix Table A1). Thus, the study may underrepresent respondents with

fewer socioeconomic resources, those who are more likely to work outside of the home, and ethnicities other than Chinese. The final sample included 1,395 person-wave observations from 358 unique respondents.

## Results

The mean age of the sample was 32.8 years at baseline (Table 1). Participants had been married for a mean of 6.5 years and had a mean of 1.6 children. The ethnic composition of the sample was predominantly Chinese Singaporean (74.6%). Most were employed in professional occupations (68.9%) and held a university degree (60.5%). Almost all of the sample remained married across waves (95.9%). There was considerable heterogeneity in teleworking policies, as 40.5% of the sample worked solely or primarily outside the home, 17.6% split their work equally between home and external locations, and 41.8% predominantly or exclusively worked from home.

Table 2 shows the bivariate associations between key variables. Correlations were all in the hypothesized directions, though not all were statistically significant. Teleworking showed a positive correlation with work–life balance ($r = 0.09$) and negative correlations with workplace relationships ($r = -0.18$) and the number of hours worked ($r = -0.19$). Work–life balance ($r = 0.26$) and workplace relationships ($r = 0.11$) were positively correlated with life satisfaction, whereas hours worked showed a negative correlation with life satisfaction ($r = -0.13$). Teleworking was not significantly correlated with life satisfaction. The correlations aligned with our theoretical model of an indirect relationship between teleworking and life satisfaction mediated by work–life balance, workplace relationships, and hours worked, suggesting that testing our proposed path model was appropriate.

We next combined these variables into a unified structural model, considering all covariates. The findings are presented in Fig. 1. Teleworking appeared to be closely related to workplace dynamics. Our analysis indicated that an increase of one standard deviation in teleworking corresponded to a 0.15 standard deviation improvement in the perceived work–life balance of respondents ($p < .001$, 95% CI = 0.08 to 0.23). Additionally, teleworking demonstrated a negative association with both workplace relationships and hours worked. Specifically, a one standard deviation increase in teleworking resulted in approximately a 0.17 ($p < .001$, 95% CI = −0.23 to −0.11) and 0.14 ($p < .001$, 95% CI = −0.21 to −0.07) standard deviation decrease in these mechanisms, respectively. Supplementary analysis that binarized the teleworking status (1 = respondent worked only or mostly from home; 0 = others) yielded consistent results (Appendix Figure A1).

Furthermore, to assess the consistency of telework's effects across different population subgroups, we examined its effects in relation to childcare responsibilities by estimating the interaction between teleworking and the number of children in predicting work–life balance, workplace relationships, and hours worked. However, these interaction effects did not yield statistically significant results. This suggests that the influence of teleworking on these mechanisms was consistent regardless of childcare responsibilities.

Of all the exogenous and endogenous predictors analyzed, work–life balance was the only factor to show a statistically significant association with life satisfaction in the

unified model. Specifically, an increase of one standard deviation in work–life balance was linked to a standard deviation increase in life satisfaction of approximately 0.12 ($p<.001$; 95% CI=0.05 to 0.18). More important, the overall mediating effect of work–life balance on the association between teleworking and life satisfaction is significant ($\beta=0.02$, $p=.008$, 95% CI=0.00 to 0.03), indicating that teleworking is primarily associated with life satisfaction through its relationship with work–life balance. The direct effect of teleworking on life satisfaction ($\beta=-0.02$, $p=.584$, 95% CI = −0.1 to 0.06) and the total effect of teleworking on life satisfaction ($\beta=-0.01$, $p=.794$, 95% CI = −0.09 to 0.07) were not statistically significant. Although our identification strategy does not fully address endogenous concerns, we used lagged values of teleworking status in these models. Nonetheless, we conducted a robustness check using contemporaneous values of teleworking status, and the results remained consistent (Appendix Figure A2).

## Discussion

This study aimed to develop a conceptual and empirical framework for understanding the association between teleworking and life satisfaction, focusing on married working women in Singapore. The research builds on previous work that has tended to focus on isolated aspects of this relationship (Anderson et al., 2015; Denzer & Grunau, 2023; Dockery & Bawa, 2014; Golden, 2006; Laß & Wooden, 2023; Yang et al., 2023). To provide a more holistic understanding, our framework assessed three potential mechanisms of the association between telework and life satisfaction: work–life balance, workplace relationships, and hours worked.

In the context of Singapore, a highly urbanized and globalized economy, we found significant associations between teleworking and measures of work–life balance, workplace relationships, and hours worked, lending partial support to our initial hypotheses. Consistent with Hypothesis 1A, teleworking individuals more frequently reported an improved work–life balance. This may reflect that teleworking improves the management of work and personal lives, reducing conflicts between the two. Although the boundary flexibility afforded by teleworking can make separating home from work difficult, our findings suggest that teleworking helps individuals regulate and synchronize competing work and family demands (Raghuram & Wiesenfeld, 2004). Furthermore, and in line with Hypothesis 1B, a positive association between teleworking on individual life satisfaction was mediated by work–life balance. This suggests that the positive effect of teleworking on life satisfaction was mostly mediated by an increased capacity to maintain a healthy work–life balance. In other words, remote workers might experience greater life satisfaction because they can more effectively manage their work and personal lives.

We observed a negative association between teleworking and workplace relationships, supporting Hypothesis 2A and suggesting that remote work can impede the development of social connections and workplace support. This finding highlights the importance of maintaining effective communication and teamwork among teleworking employees to mitigate any negative impact on workplace relationships (Graham et al., 2023). However, contrary to Hypothesis 2B, the weakening of relationships with colleagues in relation to teleworking did not significantly impact life satisfac-

**Table 1** Summary of sample characteristics ($N=358$)

| | Mean or percentage |
|---|---|
| *Dependent variable* | |
| Life satisfaction | 3.5 (0.1) |
| *Endogenous variables* | |
| Work–life balance | 3.2 (0.1) |
| Workplace relationships | 3.0 (0.1) |
| Hours worked | 40.4 (0.7) |
| *Exogenous variable* | |
| Telework status | |
| Only outside of home | 29.2% |
| Mostly outside of home | 11.3% |
| Half from home and half outside home | 17.6% |
| Mostly from home | 19.6% |
| Only from home | 22.3% |
| *Control variables* | |
| Age at baseline | 32.8 (0.2) |
| Length of marriage | 6.5 (0.2) |
| Number of children | 1.6 (0.1) |
| Occupation | |
| Professional | 68.9% |
| Nonprofessional | 31.1% |
| Monthly income | |
| Less than $1,000 | 1.9% |
| $1,000–$1,999 | 4.6% |
| $2,000–$2,999 | 19.7% |
| $3,000–$3,999 | 23.4% |
| $4,000–$4,999 | 18.8% |
| $5,000–$5,999 | 14.4% |
| $6,000–$6,999 | 8.1% |
| $7,000–$7,999 | 3.1% |
| $8,000–$8,999 | 2.0% |
| $9,000–$9,999 | 1.1% |
| $10,000 or more | 3.0% |
| Marital status | |
| Married | 95.9% |
| Divorced | 4.1% |
| Ethnicity | |
| Chinese | 74.6% |
| Non-Chinese | 25.4% |
| Education level | |
| Below university | 39.5% |
| University and above | 60.5% |

*Note* Adjusted for sample weights. Mean and standard errors (in parentheses) provided for continuous variables

tion. This result aligns with previous literature showing that although teleworking can harm workplace relationships (McCloskey & Igbaria, 2003), this does not necessarily reduce life satisfaction (Gajendran & Harrison, 2007). Employees may adapt to teleworking and find ways to compensate for the loss of workplace social interactions (Tietze, 2002).

**Table 2** Correlations between key variables

| | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|
| 1. Life satisfaction | 1 | | | | |
| 2. Work–life balance | 0.26*** | 1 | | | |
| 3. Workplace relationships | 0.11*** | 0.17*** | 1 | | |
| 4. Hours worked | –0.13*** | –0.21*** | –0.01 | 1 | |
| 5. Teleworking | 0.02 | 0.09** | –0.18*** | –0.19*** | 1 |

*Note* Adjusted for sample weights. *$p<.05$. **$p<.01$. ***$p<.001$

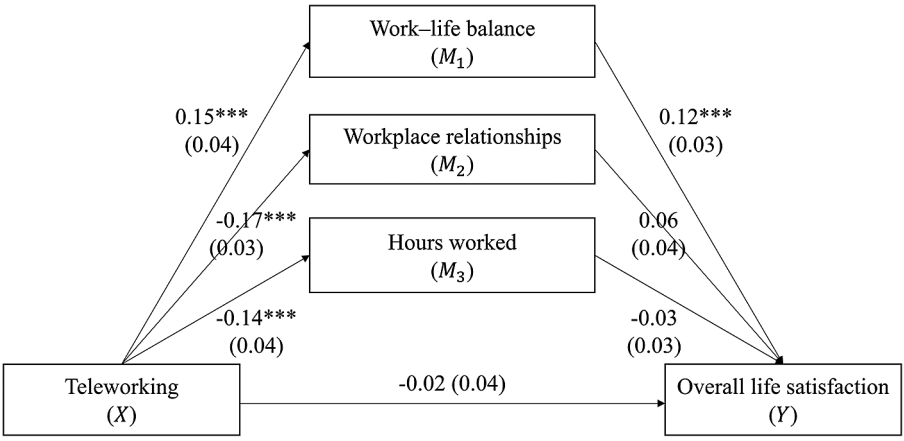


**Fig. 1** Indirect-effects path model from teleworking to overall life satisfaction. *Note* Adjusted for sample weights. $\chi^2(14)=17.93$, $p=.21$, CFI = 0.982, TLI = 0.924, RMSEA = 0.014, SRMR = 0.021. *$p<.05$. **$p<.01$. ***$p<.001$

Our findings also indicate that teleworking was associated with reduced working hours, supporting Hypothesis 3A, although this did not significantly translate into improved life satisfaction, failing to support Hypothesis 3B. Giving employees some ability to manage their work hours can result in improved productivity and efficiency. When people work during their most productive and focused hours, they can accomplish more in less time, which can lead to reduced hours (Brownson, 2004). The time saved in this process may be used to prioritize other aspects of life.

## Implications

From a theoretical perspective, these findings build on prior research by demonstrating that teleworking enhances work–life balance, which in turn improves individual life satisfaction. Among the three mediators studied, we observed that only work–life balance played a key role in impacting individual life satisfaction in those who teleworked more. Therefore, future research may need to consider the specific dynamics of distinct mechanisms to account for the interplay between teleworking, work–life balance, and life satisfaction. This complexity highlights the need for models that consider multiple pathways and mechanisms involved in the relationship between teleworking and life satisfaction.

On a practical level, our findings suggest that organizations could prioritize work–life balance and provide sufficient resources to assist their employees in strategizing their remote work arrangements. This may ensure the collective well-being of their employees when working remotely. As hybrid work models evolve, organizations may consider blended arrangements that balance remote work with in-office collaboration opportunities (Champagne et al., 2023; Graham et al., 2023). This approach allows employees to enjoy the benefits of teleworking while retaining valuable face-to-face interactions with colleagues, which may not affect overall life satisfaction but would likely improve job satisfaction (Colbert et al., 2016).

### Limitations

Some limitations may affect the interpretation of our findings. Our analysis is based on a relatively small sample of 358 married Singaporean women. Although our sample is highly comparable to national published statistics for this population subgroup in terms of key sociodemographic characteristics, namely age, ethnicity and education (see Appendix Table A2), our analysis could not assess men's teleworking experiences. Future studies should explore potential gender differences and gender-specific mechanisms. In this study, we rely on a single-item measure for assessing overall life satisfaction, due to the intense pressures of the lockdown during the pandemic, which required us to keep the length of the survey more manageable in order to elicit higher response rates, while still remaining in line with existing national panel studies and cross-national surveys administered by organizations such as the OECD, World Values Survey, and UK Office of National Statistics. Although single-item life satisfaction measures have been shown to perform comparably to multi-item measures, alternative life satisfaction measures should be tested in future studies. Second, the indicators of work–life balance and workplace relationships are relative to April 2020, as it coincides with the government-imposed lockdown, locally known as a "circuit breaker," in order to provide a salient and distinct reference period for respondents to temporally contextualize events. Future longitudinal surveys on teleworking and life satisfaction which are less vividly characterized by such momentous event markers can be improved by asking identical questions about the level of their work–life balance at the given time of the survey.

## Conclusion

This study aimed to clarify the associations between teleworking and life satisfaction in a high-income economy. Our findings indicate a complex relationship between teleworking and life satisfaction: although teleworking can present opportunities for improved work–life balance, which is linked to higher life satisfaction, it may also pose challenges related to workplace relationships. These insights call for an integrated approach to investigating the multifaceted effects of teleworking and inform a better understanding of today's rapidly evolving work landscape.

## Appendix

**Table A1** Comparison of descriptive characteristics between the analytic sample and respondents lost to attrition

| | Analytic sample | Attrited sample | *p*-value |
|---|---|---|---|
| | Mean or percentage | Mean or percentage | |
| *Dependent variable* | | | |
| Life satisfaction | 3.5 (0.1) | 3.5 (0.1) | 0.357 |
| *Endogenous variables* | | | |
| Work–life balance | 3.2 (0.1) | 3.1 (0.1) | 0.146 |
| Workplace relationships | 3.0 (0.1) | 3.1 (0.1) | 0.435 |
| Hours worked | 40.4 (0.7) | 38.6 (0.9) | 0.030 |
| *Exogenous variable* | | | |
| Telework status | | | |
| Only outside of home | 29.2% | 34.5% | 0.004 |
| Mostly outside of home | 11.3% | 10.8% | |
| Half from home and half outside home | 17.6% | 20.8% | |
| Mostly from home | 19.6% | 16.2% | |
| Only from home | 22.3% | 17.7% | |
| *Control variables* | | | |
| Age at baseline | 32.8 (0.2) | 32.8 (0.3) | 0.330 |
| Length of marriage | 6.5 (0.2) | 6.8 (0.3) | 0.103 |
| Number of children | 1.6 (0.1) | 1.6 (0.1) | 0.109 |
| Occupation | | | |
| Professional | 68.9% | 65.9% | 0.000 |
| Nonprofessional | 31.1% | 34.1% | |
| Monthly income | | | |
| Less than $1,000 | 1.9% | 1.0% | 0.000 |
| $1,000–$1,999 | 4.6% | 4.0% | |
| $2,000–$2,999 | 19.7% | 6.7% | |
| $3,000–$3,999 | 23.4% | 27.5% | |
| $4,000–$4,999 | 18.8% | 22.3% | |
| $5,000–$5,999 | 14.4% | 17.7% | |
| $6,000–$6,999 | 8.1% | 8.5% | |
| $7,000–$7,999 | 3.1% | 6.8% | |
| $8,000–$8,999 | 2.0% | 1.2% | |
| $9,000–$9,999 | 1.1% | 1.3% | |
| $10,000 or more | 3.0% | 3.0% | |
| Marital status | | | |
| Married | 95.9% | 95.9% | 0.659 |
| Divorced | 4.1% | 4.1% | |
| Ethnicity | | | |
| Chinese | 74.6% | 58.1% | 0.000 |
| Non-Chinese | 25.4% | 41.9% | |
| Education level | | | |
| Below university | 39.5% | 47.8% | 0.000 |
| University and above | 60.5% | 52.2% | |
| Sample size | 358 | 183 | |

*Note* Adjusted for sample weights. Mean and standard errors (in parentheses) provided for continuous variables. The *t*-test was used to compare the mean difference for continuous variables and the chi-squared test was used for categorical variables

**Table A2** Comparison of descriptive characteristics between the population and the analytic sample at baseline

| | Population (%) | Sample (%) |
|---|---|---|
| *Age* | | |
| 25–29 | 30.1 | 30.0 |
| 30–34 | 69.9 | 70.0 |
| *Ethnicity* | | |
| Chinese | 66.8 | 67.1 |
| Malay | 15.1 | 13.1 |
| Indian | 12.9 | 14.6 |
| Others | 5.2 | 5.3 |
| *Educational attainment* | | |
| Secondary school education or lower | 19.9 | 19.3 |
| Diploma or other professional qualifications | 30.9 | 30.4 |
| University degree or higher | 49.2 | 50.4 |

*Note* Adjusted for sample weights

*Source* Population statistics obtained from the Singapore General Household Survey 2015

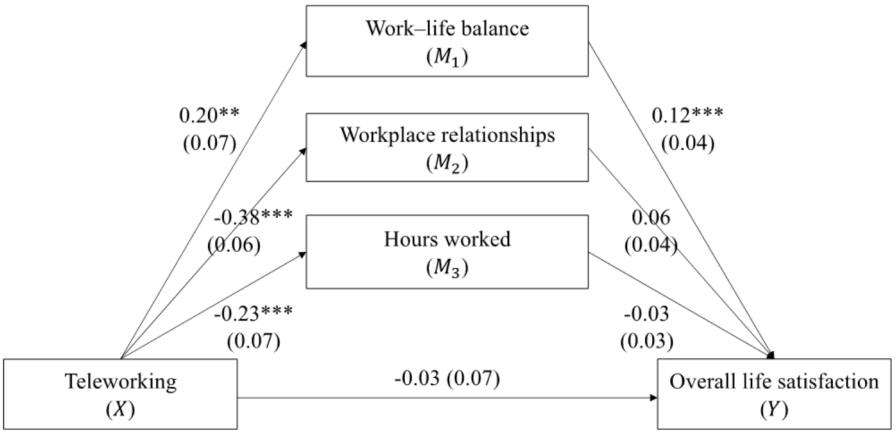


**Fig. A1** Path model using contemporaneous values of teleworking status. *Note* Adjusted for sample weights. $\chi^2(14)=17.79$, $p=0.22$, CFI=0.983, TLI=0.926, RMSEA=0.014, SRMR=0.021. *$p<.05$. **$p<.01$. ***$p<.001$

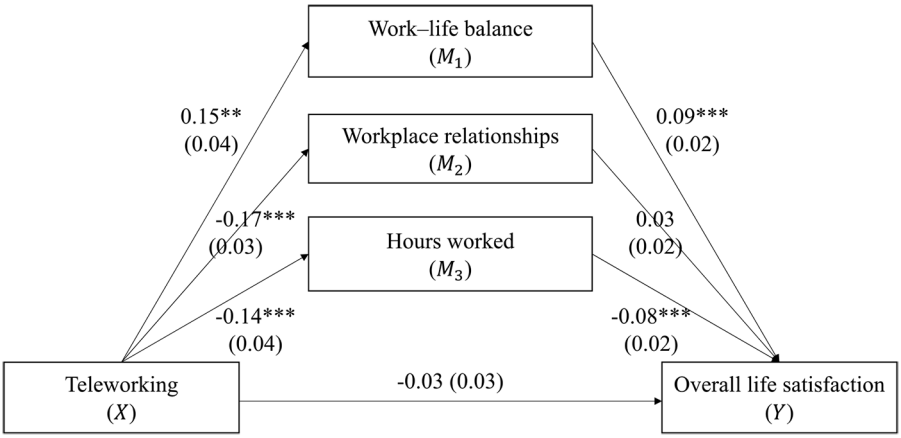


**Fig. A2** Path model using contemporaneous values of teleworking status. *Note* Adjusted for sample weights. $\chi^2(14)=17.79$, $p=0.22$, CFI=0.983, TLI=0.926, RMSEA=0.014, SRMR=0.021. *$p<.05$. **$p<.01$. ***$p<.001$

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## Declarations

**Conflict of Interest** Not applicable.



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