

Flexibility Without Boundaries: How Post-Pandemic Remote Work Trajectories Drive Longitudinal Stress and Burnout Over Time

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Abstract

The post-pandemic shift toward remote work has generated critical debate regarding its impact on employee mental health. Framed using Job-Demands Resources theory, this study examines how three work-location trajectories impact the longitudinal transmission of perceived stress into multidimensional burnout. Utilizing a two-wave Canada-wide panel design, we analyzed data from three groups: Continuous Remote (n = 174), Returned Remote (n = 329), and Continuous Essential (n = 350). Multi-group structural equation modeling (PLS-MGA) tested longitudinal paths from baseline stress (Time 1) to work and family burnout one year later (Time 2). While baseline stress significantly predicted T2 work and family burnout across all groups, Continuous Remote workers exhibited a significantly stronger relationship between baseline stress and post-pandemic burnout than Continuous Essential workers. This study demonstrates that remote work, when implemented without proper structural supports, negatively impacts long-term employee mental health. Rather than serving as an inherent resource, poorly executed remote work arrangements accelerate the transmission of perceived stress over time, driving systemic increases in both work-related and family-related burnout. To realize the true benefits of workplace flexibility, organizations must actively construct the supportive baseline conditions, boundary guidelines, and resources necessary to protect the wellbeing of their remote workers over time.

Introduction

The COVID-19 pandemic triggered an unprecedented spatial reallocation of labor, converting work-from-home (WFH) from a rare, voluntary flexibility perk into a mandatory operational model for millions of employees globally [1, 2]. At the same time, essential on-site personnel continued working in co-located environments under heightened health risks [3]. While post-pandemic employment has partially normalized, remote work remains far above pre-pandemic baselines, establishing a permanent shift in how work is organized [1, 3]. However, this shift coincided with a global surge in psychological distress, leaving organizations and researchers with a critical question: did the decline in employee well-being stem from the universal threat of the pandemic itself, or from the structural conditions of forced remote work [4, 5]?

Despite an exponential increase in research on remote work, the literature remains fragmented and inconclusive regarding its long-term impacts on employee mental health and well-being [2, 4, 6–8]. A synthesis of existing studies reveals three primary limitations. First, much of the emergency-driven research published during the crisis was data-driven or anecdotal, lacking explicit theoretical grounding across the disparate disciplines studying the phenomenon [2, 9, 10]. Second, significant empirical ambiguity persists because remote work conditions yield highly variable mental health outcomes across individuals [11]. Pre-pandemic models evaluated voluntary, part-time telework, offering little insight into forced, full-time arrangements [9, 10]. Crucially, because the transition to remote work occurred concurrently with the health crisis, cross-sectional designs have failed to isolate the psychological toll of working from home from generalized pandemic anxiety [4, 11, 12]. Third, existing studies overwhelmingly rely on single-wave, cross-sectional samples, failing to track how employee strain evolves from peak crisis conditions into post-pandemic work arrangements [5, 8].

To address these limitations, this study utilizes a longitudinal panel dataset of over 800 employees tracked across two distinct time points: the height of pandemic disruptions in Fall 2022 (T1) and the post-pandemic recovery phase in Fall 2023 (T2). By tracking individuals across this transition, we evaluate how baseline pandemic stress (T1) predicts post-pandemic work and family burnout (T2) across three distinct occupational trajectories:

1. **Continuous Remote Workers** (n = 174): Employees who worked remotely during the pandemic and remain remote.
2. **Returned Remote Workers** (n = 329): Employees who worked remotely during the pandemic but transitioned back to the office.
3. **Continuous Essential Workers** (n = 340): Employees required to work on-site throughout both the pandemic and post-pandemic periods.

By comparing these group trajectories over time, this study isolates whether sustained psychological strain and burnout are attributable to lingering crisis-era distress or to the ongoing structural arrangements of work location. In doing so, we advance the literature from static snapshots to a trajectory-based understanding of remote work, offering actionable insights for post-pandemic workplace design, hybrid management, and organizational well-being policies [11, 12].

Literature Review: Advantages and Disadvantages of Remote Work

There has been a wealth of studies and reports published before and after the COVID-19 outbreak on the impacts of remote working (also known as work-from-home, WFH, telework, and e-work) on both employees and employers [1, 2]. In this paper we synthesize empirical findings from key recent systematic and scoping reviews of the remote work literature done before the pandemic [7, 10, 13] and before/during/immediately following the pandemic [1, 2, 4, 11, 12, 14]. We also refer to Xiong et al.'s [5] systematic review of research on how the pandemic impacted mental health.

Pre-Pandemic

Literature reviews of research on the impact of remote work on employees done before the pandemic [3, 7, 9, 12, 13] identify a variety of possible benefits and drawbacks of this arrangement. Conclusions from this body of research are outlined in Fig. 1.

While acknowledging a variety of drawbacks to this way of working, research on remote work done before the pandemic is largely supportive of this arrangement [7]. Despite the potential drawbacks listed in Fig. 1, the extant research shows that remote workers were more enthusiastic about their job, more loyal to their organization, and reported greater job satisfaction and significantly lower levels of work-related stress than their office-based counterparts [3, 7, 9, 13]. This was facilitated by organizational selection and training processes, dedicated home workspaces, and formal technical supports [1, 3, 11].

During the Pandemic

Of note, research on remote work during the pandemic did not report any of the potential benefits of this arrangement (e.g., cost-effectiveness, reductions in commute time, increases in work flexibility, work-family balance and employee wellbeing) cited in earlier research [12]. They did, however, list a myriad of challenges remote workers experienced at this time as outlined in Fig. 2. As noted by Shirmohammadi et al. [12] the pandemic context allowed the dark side of remote work to become more observable than before.

Figure 2 Here

Systematic reviews of the research undertaken during the pandemic reveals that the relationship between remote work and the widespread prevalence of mental challenges experienced by employees is complex, unequally distributed, and depends on a numerous factors including organizational support, personal circumstances (age, gender, job role), remote worker's family responsibilities during working hours, the availability of childcare, whether schools have been disrupted, social isolation, and challenges in adapting home environments into conducive workspaces [2, 3, 4, 12, 14, 15]. A scoping review of the pandemic remote work literature done by Lyzwinski [4] found that the well-being of remote workers varies on a continuum, and factors such as employment characteristics, gender, isolation and loneliness, co-worker support, leadership style and support, as well as home office conditions all impact whether or not an employee workers had a positive experience or challenging experience with remote work.

Specifically, research supports the idea that the transition to remote work during the pandemic posed significant challenges for younger employees, knowledge workers, women, those who did not have access to a dedicated room when working from home, and employees balancing household responsibilities and professional duties who did not have access to childcare, and were required to home school their children when schools were closed. These factors made it more challenging for professional employees to disengage from work and resulted in longer work hours, a blurring of the boundaries between work and family and higher work-family conflict [3, 9, 12]. Finally, the shift to working remotely during the COVID-19 pandemic along with the inability to go to "third places" and the lack of social connection reinforced the link between remote work, social isolation and employee wellbeing [3, 9, 15].

Post-pandemic Stabilization

In a recent scoping review McPhail et al., [2] note that researchers have made arguments for and against the use of remote work in the post-pandemic workplace. The evidence presented in this review suggests that the advantages and disadvantages experienced by remote workers post-pandemic will revert to those observed pre-pandemic. For example, McPhail et al [2] note that over time remote workers have become as productive as they were pre-COVID and appreciate the flexibility and the time saved from not having to commute. Moreover, parents do not have the challenges of home schooling their children, daycares are up and running and employees are less likely to feel isolated as social-distancing restrictions are no longer needed. Finally, post-pandemic environments permit organizational sorting, and we expect that employees who find that the challenges of remote work outweigh the advantages will return to the office full time given the opportunity [2].

Context Matters: The Fit-Misfit Continuum

Based on a review of two decades of research on remote work, Leonardi et al., [2] provide an excellent comparison of the contextual conditions surrounding the adoption of remote work pre and post-pandemic. Prior to the pandemic, there was a common understanding of who should be permitted to work remotely. This group included: (1) individuals with caregiving responsibilities obligations who should benefit from the structural and temporal flexibility offered by remote work, (2) individuals with the competencies required to be productive when working from home (e.g., self-discipline, communication skills, initiative, adaptability, time management and technical skills), (3) individuals with remote compatible jobs (e.g., low interdependence, task clarity, adequate material resources, established social connections), and (4) individuals with disability who found it challenging to access the office. During the pandemic these pre-requisites were absent because remote work was considered a "situational necessity" generating stress for those lacking the skills or supporting infrastructure needed to work effectively at home [1].

Shirmohammadi et al.'s [10] Fit/Misfit continuum summarized in Fig. 2 provides additional insights into how context impacted the relationship between remote work and employee wellbeing. They argued that employee's experiences with remote work fell along a continuum between pre-pandemic fit and pandemic-era misfit across four themes: (1) flextime vs. work intensity, (2) flexplace vs. space limitation, (3) a technologically feasible work arrangement vs. technostress and isolation, and (4) family-friendly work arrangement vs. housework and care intensity [10].

Examining baseline stress (T1) and post-pandemic outcomes (T2) across three different pre-pandemic/post-pandemic work trajectories allows us to compare the mental health of workers maintained in continuous remote arrangements (Continuous Remote), those who transitioned from pandemic remote work back to co-located office environments (Returned Remote), and an on-site baseline control group (Continuous Essential).

Theoretical Framework and Hypotheses

To explain how work-location trajectories dictate mental health, we adopt the Job Demands-Resources (JD-R) theory [11, 16, 17]. JD-R posits that employee well-being is governed by two coexisting pathways: a health-impairment process driven by job demands and a motivational process sustained by job resources [11, 17, 18]. Job demands are physical, psychological, social, or organizational facets of work requiring sustained effort that incur physiological and psychological costs [16]. Unmitigated demands induce energy depletion, culminating in stress, health impairment, and burnout [11, 17]. Conversely, job resources are aspects of the job that reduce demands, facilitate goal achievement, and stimulate personal growth and autonomy [11, 16].

Prior to the pandemic, remote work operated primarily as a job resource by providing flexibility and autonomy and eliminating commutes [9]. With the onset of the pandemic, however, the operational context changed (see Fig. 1), and remote work imposed a variety of demands [9]. Leonardi et al. [1] argue that the increase in demands faced by those working remotely during the pandemic can be linked to four types of distance: psychological distance (cognitive, affective, or social separation requiring high cognitive effort to overcome), temporal distance (differences in work schedules and asynchronous communication increasing friction), technological distance (disparities in media richness and technical proficiency which reduce work efficiency), and structural distance (misalignments between formal and informal organizational demands regarding hours and expectations).

At the same time, emergency remote work stripped employees of essential organizational resources [1]. In-person operations provide direct access to social resources (spontaneous co-worker support and information exchange), material resources (tailored hardware, ergonomic infrastructure, and acoustic isolation), and symbolic resources (shared cultural norms, physical workplace boundaries, and structured disengagement cues) [1, 11]. During the pandemic, the absence of these resources coupled with environmental demands such as inadequate home workstations, domestic distractions, and prolonged social isolation converted remote arrangements into a primary driver of psychological strain [11].

The Stress-to-Burnout Mechanism Across Life Domains

To capture this health-impairment pathway longitudinally, we conceptualize mental health through two distinct yet interrelated constructs: perceived stress at baseline (T1) and multi-domain burnout post-pandemic (T2). Perceived stress is defined as the degree to which an individual appraises their life situations as unpredictable, uncontrollable, and overloading [19]. Under JD-R, perceived stress represents the acute, immediate state of energy depletion triggered when environmental demands outweigh available coping capacities [17, 19].

When acute stress (T1) remains unmitigated over time due to persistent demands or resource deficits, the health-impairment process progresses into burnout (T2) [17]. Burnout is defined as a state of chronic physical, emotional, and mental exhaustion resulting from prolonged exposure to emotionally draining conditions [16]. JD-R theorizes that resources and demands span multi-domain life spheres [20, 21].

Expanding JD-R into non-work domains [20], we evaluate both burnout from work (feeling chronically drained by occupational demands) and burnout from family (feeling emotionally depleted by domestic obligations). JD-R theorizes that resources and demands span multi-domain life spheres [20]. Since remote work has been shown to blur the spatial and temporal boundaries between employment and home life (see Fig. 1), unresolved pandemic related stress (T1) acts as an unmitigated demand that depletes emotional reserves across both professional and personal spheres, manifesting as elevated work and family burnout (T2).

Hypotheses Development

Baseline perceived stress (T1) represents initial energy depletion resulting from demand/resource imbalance during the pandemic [17]. When this acute strain remains unmitigated over time, it leads to burnout [16]. Because emergency work arrangements and working conditions dissolved spatial and temporal boundaries between employment and home (see Fig. 1), this energy depletion spills over into both occupational and domestic spheres post-pandemic (T2) [20].

- H1a: Perceived stress at T1 is positively associated with work burnout post-pandemic (T2).
- H1b: Perceived stress at T1 is positively associated with family burnout post-pandemic (T2).

While baseline stress (T1) establishes initial energy depletion, the progression of this strain into multi-domain burnout (T2) is, we argue, bounded by the employee's work-location trajectory [1]. Predicting a simple directional advantage among the three trajectories considered in this study does, however, present a theoretical paradox. Transitioning from remote back to on-site work may reduce strain by restoring physical workplace boundaries and in-person social resources [11]. Conversely, it may introduce new demands associated with the adaptation process, commuting demands, and lost temporal autonomy and flexibility. Crucially, the extent to which these trajectories impose additional demands on employees or offer them new resources is likely to be contingent on unobserved organizational constraints, such as whether the return to on-site work was employer-mandated or voluntary, and whether continuous remote status reflected personal preference or organizational capacity limits. Because these unmeasured structural conditions create competing demand-resource configurations across trajectories, we posit that the strength of the longitudinal strain transmission will vary significantly across groups without specifying a priori which trajectory will exhibit the steepest slope.

- H2a: The strength of the positive relationship between perceived stress at T1 and post-pandemic work burnout (T2) significantly differs across work-location trajectories (Continuous Remote, Continuous Essential, and Remote-to-On-Site).
- H2b: The strength of the positive relationship between perceived stress at T1 and post-pandemic family burnout (T2) significantly differs across work-location trajectories (Continuous Remote, Continuous Essential, and Remote-to-On-Site).

Methods

Participants and Procedure

Using a multi-wave panel study research design, we collected data across two time points separated by one year. In Fall 2022 we conducted a large Canada-wide work-family balance survey. At the end of this survey, we included a question asking participants if they would be willing to participate in follow-up research. Of the 4,000 that said agreed to participate in follow-up studies, 882 employees participated in a survey administered in Fall 2023. We used employee emails provided in the initial survey to link employees across both waves. The study was approved of Carleton University Research Ethics Board-A (CUREB-A) Project # 112715. All procedures were conducted in compliance with the *Tri-Council Policy Statement: Ethical Conduct for Research Involving Humans* (TCPS2). Informed consent was obtained from all participants prior to participation.

To examine how the temporal pattern of remote work relates to mental health, participants were classified into a 2x2 framework crossing current remote-work status (currently remote vs. on-site) with prior remote-work status (remote during the COVID-19 pandemic vs. on-site). Our sample allowed us to test our model on three groups: Continuous Remote (Group 1, *n* = 174), Returned Remote (Group 2, *n* = 329), and Continuous Essential (Group 3, *n* = 340). Only *n* = 39 people were classified into the fourth possible cell in our framework (in-person during the pandemic, remote post-pandemic. This group was, therefore, removed from the analysis. Key sample demographics are reported in Table 1.

Table 1: Three Remote Work Groups

Group 1: Continuous Remote (n = 174)		Group 2: Returned Remote (n = 329)		Group 3: Continuous Essential (n = 340)	
Mean	Std Dev.	Mean	Std Dev.	Mean	Std Dev.
% Male	22		21		23
% Married or living with partner	75		75		72
Age (mean)	47.76	11.69	48.03	10.95	48.12
% with undergrad degree or higher ***	69 ^a		85 ^b		65 ^a
Family financial status (mean)*	3.33 ^a	.96	3.55 ^b	.93	3.34 ^a
Work hours (mean)	34.85	12.01	34.26	9.96	34.19
Childcare hours (mean)	17.41	34.54	17.17	32.76	20.31
Eldercare hours (mean)	8.48	7.69	10.02	10.68	9.86
Work Burnout (mean) *	2.84	1.08	2.74 ^a	.98	2.87
Stress T1	2.58	1.00	2.54	.91	2.57
Stress T2	2.52	.99	2.53	.90	2.64
Note. * $p < .05$. ** $p < .01$. *** $p < .001$. ^a and ^b superscripts reflect significantly different means.					

Table 1 here

Measures

Perceived stress was measured at both Time 1 and Time 2 using Cohen et al.'s 10-item Perceived Stress Scale (e.g., "How often are you upset because something happened unexpectedly?") [19]. Work-related burnout was measured at Time 2 using the 6-item Emotional Exhaustion scale sourced from Maslach Burnout Inventory (e.g., "How often are you "burned out" from your job?") [23]. Family-related burnout was measured at Time 2 using the same 6-item Maslach Burnout Inventory [23] but adapted to the family domain (e.g., "How often are you 'burned out' because of the demands placed on you at home").

Remote-work status was assessed with a single item asking what percentage of the time the respondent worked remotely at that point in time (i.e., during the pandemic, after the pandemic). During the pandemic, 42% reported working only in-person, while the rest worked remotely. Post-pandemic, 16% reported working strictly in-person, 16% reported working remotely occasionally (one or two days per week). The remaining 68% engaged in high-intensity remote work defined by Beuregard et al. [9] as spending half the working week or more working from home. We converted these two continuous variables into a single categorical variable. We first converted each continuous variable into a binary variable by coding respondents that indicated they worked 30% or more in a remote/hybrid manner as 1 and all others as 0 (i.e., work in the office). These two binary variables were then combined to generate our 2x2 matrix described above. Finally, age, gender, childcare, and marital status were included as control variables in the analysis, as work-life research indicates that these demographic variables can influence stress and burnout [24].

Analytic Strategy

Hypotheses were tested using partial least squares structural equation modeling (PLS-SEM) in SmartPLS (version 4.1.1.7). PLS-SEM was selected because it accommodates the prediction-oriented aims of the study, is robust to non-normality, and is well suited to multi-group comparison [25, 26]. The structural model specified perceived stress at Time 1 as an antecedent of three Time 2 outcomes: work burnout, family burnout, and perceived stress.

Following recommended practice [26], we first assessed the measurement model for reliability and convergent and discriminant validity. We evaluated indicator reliability (outer loadings), internal consistency reliability (composite reliability and Cronbach's alpha), and convergent validity (average variance extracted; AVE). Significance of outer loadings and path coefficients were established using bootstrapping with 5,000 subsamples.

To compare the structural relationships across the four groups, we conducted multi-group analysis (PLS-MGA). We tested for differences in structural path coefficients between groups using Henseler's PLS-MGA, a non-parametric test that derives the significance of group differences from the bootstrap distribution of group-specific parameter estimates (5,000 subsamples). A difference was considered significant when the PLS-MGA p -value was below .05 (or above .95).

Results

Measurement model

All indicator outer loadings exceeded the recommended threshold of .70. Composite reliability values ranged from .9 to .96, and Cronbach's alpha values from .89 to .97, both exceeding .70, indicating adequate internal consistency. AVE values ranged from .66 to .84, exceeding the .50 criterion and supporting convergent validity. Descriptive statistics and correlations are reported in Tables 2a and 2b.

Table 2
a: Means, standard deviations, and correlations

	Group 1: Continuous Remote		Group 2: Returned Remote		1	2	3	4	5	6	7	8
	Mean	Std. Deviation	Mean	Std. Deviation								
1. Gender (%)	22	.57	21	.43		.071	– .119*	– .030	.058	.089	.038	.118*
2. Married or living with partner (%)	75	.42	75	.47	.116		.102	– .153**	.169**	.141*	.133*	.017
3. Age	47.76	11.69	48.03	10.95	– .089	– .098		– .246**	– .241**	– .169**	– .201**	– .233**
4. Childcare	17.41	34.54	17.17	32.76	.120	– .104	– .252**		.009	– .030	– .006	.218**
5. Perceived Stress at T1	2.58	1.00	2.54	.91	.094	.041	– .269**	.207**		.659**	.560**	.405**
6. Perceived Stress at T2	2.52	.99	2.53	.90	.063	.076	– .301**	.190*	.729**		.724**	.548**
7. Work burnout at T2	2.84	1.08	2.75	.98	.091	.069	– .312**	.184*	.694**	.790**		.460**
8. Family burnout at T2	1.91	.87	1.97	.87	.089	– .073	– .233**	.330**	.467**	.600**	.496**	
<i>Cronbach's alpha</i>									.89/.94	.92/.90	.94/.97	.93/.93
<i>Composite reliability</i>									.90/.94	.92/.92	.94/.97	.94/.93
<i>Average variance extracted</i>									.66/.77	.71/.84	.74/.84	.72/.71
<i>Note.</i> * $p < .05$. ** $p < .001$. Gender coded as 1 = male, 0 = other. Married or living with partner coded as 1 = married or living with partner, 0 = other. Data from Remote During and After group are shown in the bottom left of the correlation matrix and left side of the italicized font. Data from Remote During But Not After group are shown in the top right of the correlation matrix and right side of the italicized font.												

Table 2
b: Means, standard deviations, and correlations

	Group 3: Continuous Essential		2	3	4	5	6	7	8
	Mean	Std. Deviation							
1. Gender	23	.45	.067	-.153**	.061	.178**	.173**	.157*	.036
2. Married or living with partner	72	.45		.004	-.086	-.043	.087	.038	-.055
3. Age	48.12	11.90			-.350**	-.416**	-.385**	-.418**	-.241**
4. Childcare	20.31	39.72				.271**	.159*	.177**	.273**
5. Perceived Stress at T1	2.57	.98					.663**	.621**	.393**
6. Perceived Stress at T2	2.64	.98						.789**	.522**
7. Work burnout at T2	2.87	1.11							.410**
8. Family burnout at T2	2.00	.91							
<i>Cronbach's alpha</i>						.92	.91	.96	.94
<i>Composite reliability</i>						.92	.92	.96	.94
<i>Average variance extracted</i>						.71	.70	.80	.74
Note. * $p < .05$. ** $p < .001$. Gender coded as 1 = male, 0 = other. Married or living with partner coded as 1 = married or living with partner, 0 = other.									

Tables 2a and 2b Here

Structural Model and Hypothesis Testing

Across all three work-location trajectories baseline levels of perceived stress (T1) was a significant positive predictor of all three Time 2 outcomes (all $p < .001$) supporting H1a and H1b. The magnitude of these longitudinal path coefficients, however, differed systematically across groups. The strongest stress-transmission effects were consistently observed among employees who in the Continuous Remote trajectory (Group 1) while the weakest effects were observed in the Continuous Essential worker group (Group 3).

To evaluate these different longitudinal patterns, structural paths estimates and trajectory-based comparisons were evaluated across each set of outcomes.

- **Work burnout:** Time 1 perceived stress positively predicted Time 2 work burnout in all groups: Group 1 ($\beta = .628, p < .001$), Group 2 ($\beta = .494, p < .001$), Group 3 ($\beta = .467, p < .001$).
- **Family burnout:** Time 1 perceived stress positively predicted Time 2 family burnout in all groups: Group 1 ($\beta = .390, p < .001$), Group 2 ($\beta = .367, p < .001$) and Group 3 ($\beta = .288; p < .001$).
- **Persistence of Perceived stress:** Time 1 perceived stress strongly predicted Time 2 perceived stress in all groups: Group 1 ($\beta = .688, p < .001$), Group 2 ($\beta = .636, p < .001$) and Group 3 ($\beta = .519; p < .001$).

Multi-Group Analysis (PLS MGA)

Henseler's non-parametric PLS-MGA was conducted to evaluate structural path differences between trajectories (H2a and H2b). The analysis confirmed significant group differences between Continuous Remote workers (Group 1) and Continuous Essential workers (Group 3):

- **Transmission of Perceived Stress to Work Burnout Over Time:** The path from Time 1 perceived stress to work burnout was significantly stronger for Group 1 (Continuous Remote) than for Group 3 (Continuous Essential) ($\Delta\beta = .161, p = .03$), supporting H2a.
- **Transmission of Perceived Stress to Family Burnout Over Time:** The path from Time 1 perceived stress to family burnout was significantly stronger for Group 1 (Continuous Remote) than for Group 3 (Continuous Essential) ($\Delta\beta = .171, p = .05$), supporting H2b.
- **Persistence of Perceived Stress:** The longitudinal carryover of perceived stress from Time 1 to Time 2 was also significantly greater for Group 1 (Continuous Remote) relative to Group 3 (Continuous Essential) ($\Delta\beta = .172, p = .03$).

Control Variable Effects

Covariate analyses revealed distinct demographic patterns across the three work-location trajectories:

- Group 1 (Continuous Remote): Age exhibited a significant negative direct effect on Time 2 work burnout ($\beta = -.156, p = .002$) and on the relationship between Time 1 and Time 2 perceived stress ($\beta = -.114, p = .021$). Weekly childcare hours were positively associated with Time 2 family burnout ($\beta = .166, p = .015$).
- Group 2 (Returned Remote): Weekly childcare hours significantly and positively predicted Time 2 family burnout ($\beta = .209, p < .001$)
- Group 3 (Continuous Essential): Age was negatively associated with Time 2 work burnout ($\beta = -.132, p = .039$) whereas weekly childcare hours positively predicted Time 2 family burnout ($\beta = .179, p = .022$).

Discussion

The primary objective of this study was to examine how the longitudinal transmission of perceived stress into multidimensional burnout operates across three distinct work-location trajectories: Continuous Remote (Group 1), Returned Remote (Group 2), and Continuous Essential (Group 3). Utilizing a two-wave Canada-wide panel design, our findings demonstrate that baseline perceived stress during the pandemic (Time 1) acted as a significant longitudinal antecedent of both work-related burnout and family-related burnout one year later (Time 2) across all work-location arrangements. These results provide robust support for **H1a** and **H1b**, reinforcing the foundational premise of the JD-R model that chronic psychological strain generates long-term health-impairment processes [20]. To explain the psychological mechanics of this transmission, JD-R integrates directly with Conservation of Resources (COR) theory [27]. Under this combined framework, pandemic-induced demands functioned as an acute resource loss event [27]. According to COR theory, individuals with depleted resource reservoirs become increasingly vulnerable to secondary losses, initiating a sustained loss spiral [27]. Rather than dissipating as public health restrictions eased, unmitigated baseline stress continued to drain cognitive and emotional energy, accumulating into structural exhaustion across both work and domestic domains a full year later [27].

Crucially, our multi-group analysis (PLS-MGA) reveals that work-location trajectories systematically moderated the intensity of this longitudinal strain transmission, supporting H2a and H2b. Employees who remained in Continuous Remote arrangements (Group 1) exhibited significantly steeper pathways from T1 stress to T2 work burnout ($\Delta\beta = .161, p = .03$) and family burnout ($\Delta\beta = .171, p = .05$), than Continuous Essential workers who remained strictly on-site (Group 3). Continuous Remote workers also demonstrated significantly higher pandemic-related perceived stress persistence over time ($\Delta\beta = .172, p = .03$). The contrast between the mental health outcomes of workers in these two groups illuminates a central paradox of post-pandemic remote work: while spatial flexibility is conventionally conceptualized as an organizational resource that supports autonomy and work-life integration [9, 13], continuous remote work during and immediately following the pandemic generated profound demand-resource imbalances [1].

Pre-pandemic remote work succeeded because it was voluntary, highly selective, supported by tailored organizational infrastructure, and equipped with dedicated workspace boundaries [1, 7, 10]. During the pandemic, however, remote work was involuntarily and mandated without these necessary baseline conditions, forcing employees to manage escalated job demands within unprepared domestic environments [10, 11]. As Leonardi observed, technology-mediated remote work under these unsupportive conditions dramatically increases digital communication demands and constant availability expectations [1]. When continuous remote work lacks firm structural boundaries and organizational support, spatial flexibility ceases to function as a job resource and instead acts as a catalyst for ongoing demand overload and strain escalation [1, 10].

To understand why Continuous Remote workers experienced significantly steeper strain transmission than Continuous Essential workers, it is necessary to examine how spatial location alters work-family boundary permeability and recovery processes. In classical JD-R terms, remote work is framed as a job resource that provides temporal and spatial autonomy. However, when work is continuously conducted within the primary residence, physical and temporal boundaries between professional and domestic roles collapse. For Continuous Remote workers, the home environment becomes a site of simultaneous role demands, increasing work-family role blurring and continuous cognitive availability. Under COR theory, the inability to mentally disengage or physically segment work from family life prevents psychological recovery, accelerating resource depletion [27]. Baseline stress is thus continuously reinjected into both domains, magnifying its translation into long-term work and family burnout.

Conversely, the weaker longitudinal transmission observed among Continuous Essential workers (Group 3) highlights the protective function of structural boundary enforcement. Although essential workers faced substantial acute operational demands during the pandemic, their work arrangements enforced physical and temporal segmentation between the workplace and the home. Leaving the physical workplace at the end of a shift created a clear boundary transition, facilitating dedicated off-job recovery time and limiting cross-domain loss spirals [27]. Results for our demographic covariates reinforce this boundary mechanism. Across all groups, childcare hours significantly predicted family burnout, reflecting the vulnerability of parents managing high domestic demands. In continuous remote environments, however, childcare obligations directly compete with work tasks in real time, turning flexibility into a source of structural overload rather than strain reduction.

Research done prior to the pandemic (see Fig. 1) demonstrates that remote work per se is not inherently deleterious to employee mental health. Prior to the pandemic, remote work arrangements functioned effectively as a job resource because they were voluntary, selective, supported by tailored organizational infrastructure, restricted to suitable job roles, and paired with proper boundary-management training [1, 7, 10]. Our longitudinal data suggest, however, that post-pandemic workplace transitions have largely failed to reinstate these essential supportive mechanisms [1, 11]. When organizations maintain continuous remote structures without re-establishing voluntary choice, job fit, clear boundary guidelines, and organizational support, spatial flexibility loses its resource-generating potential [1, 10]. Instead, it exposes employees to ongoing role blurring and resource loss spirals [11, 27]. For remote work to deliver its intended well-being benefits, leadership must intentionally reconstruct the supportive baseline conditions that historically enabled remote flexibility to succeed [1, 10].

Figure 1 here

Practical Implications, Limitations, and Future Directions

From a managerial standpoint, these findings indicate that remote work policies cannot be evaluated solely on short-term productivity metrics or spatial availability. Because poorly implemented continuous remote arrangements significantly intensify the longitudinal transmission of strain into work and family burnout, organizations must implement active structural boundary controls. Rather than leaving boundary management entirely to individual discretion, leaders should establish clear organizational norms surrounding communication windows, right-to-disconnect expectations, and dedicated technical and ergonomic support [1, 10, 11]. Providing structured organizational support helps restore the resource-generating capacity of remote work, preventing temporal flexibility from devolving into constant work availability.

Several limitations of this study warrant consideration. First, while our two-wave panel design improves upon static cross-sectional research, future studies should incorporate three or more measurement waves to model non-linear trajectories and complex mediation mechanisms over time. Second, our study did not track whether employees' work arrangements were required by their employer or personally chosen. Within the JD-R framework [20], personal control over one's work environment is a critical psychological resource. When employees have the autonomy to choose where they work, that sense of control can buffer the relationship between demands and perceived stress. When an employee is, however, mandated to use a particular work arrangement, the lack of choice acts as an added demand. Because we could not separate voluntary choices from forced requirements, future research should account for policy mandates directly. Third, while our sampling captured broad demographic diversity across Canada, individual-level environmental factors such as housing size, dedicated home-office infrastructure, and specific caregiving arrangements were not fully controlled for and may further influence work-family boundary permeability [3, 12].

Conclusion

In conclusion, this study demonstrates that remote work, when implemented without proper structural supports, negatively impacts long-term employee mental health. Rather than serving as an inherent resource, poorly executed remote work arrangements accelerate the transmission of perceived stress over time, driving systemic increases in both work-related and family-related burnout. To realize the true benefits of workplace flexibility, organizations must actively construct the supportive baseline conditions, boundary guidelines, and resources necessary to protect the wellbeing of their remote workers over time.

Data availability

The datasets generated analysed during the current study are not publicly available as our ethics protocol precludes sharing of the data. They are, however, available from the corresponding author on reasonable request.

Declarations

Competing Interests

The authors, LD and MH declare no competing interest.

Author Contribution

LD and MH designed the study, designed the survey instrument. LD was in charge of getting the sample, MH did initial data analysis and the data analysis for this paper. MH wrote the methods and results sections of the paper. LD prepared the rest of the manuscript. Both authors reviewed the manuscript. Both authors communicated extensively throughout the paper preparation process.

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Figures

Definitions:		
Telework/Remote Work: Professional work executed outside the central office using the internet and digital tools [1, 7]		
Work-from-Home (WFH): Professional work executed in primary residence [2]		
Global Prevalence Rates:		
- Pre-pandemic Baseline (2019): 4% Canada, 6% USA, 11% EU [1, 21, 22] - Pandemic Lockdown: 41% Canada, >35% USA, 37% EU [1, 21, 22] - Post-pandemic (2023): 17-24% working 2+ days/week remotely [3]		
	Pre-pandemic Context (Voluntary, selected, supported)	Pandemic Context (Involuntary, not supported)
	In comparison to those who worked at the office remote workers reported:	
Benefits	Work-family balance [3, 7, 9, 12, 13] Job autonomy and satisfaction [3, 7, 9, 12, 13] Enhanced work efficiency [3, 9, 12] Reduced commute time/work-related expenses [3, 13] Greater flexibility in work hours [13] Better mental health (lower levels of stress and depression, less exposure to work-related politics, increased sense of wellbeing) [9, 12, 13]	Most authors did not identify benefits during the pandemic
Drawbacks	Higher levels of work-intensification (often work during non-work hours; find it hard to switch off from work) [3, 7, 12, 13] Blurring of the boundaries between work and family [3, 7, 13] Feeling isolated and lonely [3, 12, 13]	Higher levels of work-intensification (escalation of job demands; suboptimal working conditions; continuous pressure to remain constantly available at work) [11, 15] Declines in mental health and burnout (increased reports of anxiety, exhaustion, emotional stress, loneliness, inefficacy; sense of isolation; reductions in time spent in self-care and managing physical/mental health) [3, 11, 12, 15] Increased family-related stress due to need to attend to family-related tasks (homeschool children, care for elderly family members) while working, [3, 12] Reduced work efficiency and productivity because of inadequate technology, lack of work tools, frequent Zoom meetings with colleagues, a decline in uninterrupted work hours, increases in on-line communication and coordination activities and meetings and disruptions from the family [2, 3, 12] Declines in job satisfaction [11, 15] Higher levels of work-family conflict and a blurring of the lines between work and personal life [3, 11, 12] Lower support from their organization, lower job satisfaction [11, 12, 15]

Figure 1

Figure 1: It is all about context: Remote work before and during the pandemic

Pre-Pandemic	During the Pandemic
Remote Work Fit-Misfit Continuum	
Fit —————→ Misfit	
Flexitime	Work Intensity
Research shows that remote workers benefited from flexibility in the timing of work, enhanced job autonomy and greater work-life balance	Studies show a disconnect between employer's expectations regarding productivity during the pandemic (they did not change) and remote worker's ability to deliver on these expectations which declined because of the remote workers family obligations and a reduction in work efficiency when working from home. This mean that employees experienced work intensification, greater conflict between work and family, and higher stress.
Flexplace —————→ Space Limitations	
Remote work involves 'flexplace', defined as flexibility in the location where work is done. At this end of the continuum employees whose job was amenable to work from home, who wanted to work from home, had the skills to work from home, had access to a dedicated workspace at home and received support from their employer for remote work benefited from this arrangement (time and energy saved by not having to commute to work used for family and personal actives).	During the pandemic non-essential workers were mandated to work from home regardless of the employees' preferences for remote work or their ability to work effectively at home. Managing work, personal, and family life at home required sharing and reorganizing space to ensure multiple household members could meet their work commitments and children could complete their schoolwork. Employees who did not have access to a dedicated home office experienced higher levels of work-family conflict and reductions in their mental health.
Technologically Supported —————→ Technostress and Isolation	
The use of information and communication technologies (ICTs) makes remote work possible. Prior to the pandemic organizations ensured that remote workers were provided access to the technology and infrastructure needed to enable productive remote work. Technical training and support were also provided.	Research during the pandemic highlighted technostress and isolation as two major challenges experienced by remote workers. Technostress arose because employees who had never worked from home had difficulties adjusting to the use of complex ICTs and/or lacked the appropriate technical tools. Remote workers had to use ICTs to communicate with their work colleagues and clients. This increased the time spent in work communications and ultimately declines in their mental health. These issues were exacerbated by feelings of professional isolation and loneliness, because social interactions were low quality.
Family-Friendly —————→ Challenges Maintaining Boundaries	
Work-life scholars who studied this work arrangements pre-pandemic found that remote work helped workers juggle professional work and personal responsibilities. This reduction in work-family conflict was associated with higher levels of wellbeing.	Research conducted during the pandemic revealed that school closures and a lack of work-family supports in the community intensified family demands, negatively influenced parents who engaged in remote work's ability to concentrate on work-related tasks when working from home resulting in increases in work-family conflict and stress.

Figure 2

Figure 2: Remote Work Fit-Misfit Continuum [10]