Time for Self-Care: Downtime Recovery as a Buffer of Work and Home/Family Time Pressures

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Objective: Opportunities for people to recover from stress are insufficient, because demanding and excessive life activities leave little time for recovery. Downtime is a self-care behavior that can occur in any life domain (ie, work, home/family, leisure). **Methods:** Using survey data from a cross-section of 422 U.S. workers, we tested hypotheses regarding downtime as a buffer of the effects of time pressure and whether downtime's benefits were related to the domain in which it was taken, or influenced by perceived time control. **Results:** In situations of high time pressure, work and home/family downtime were beneficial when time control was high, while relaxing leisure was beneficial when time control was low. **Conclusions:** Downtime is available whenever people recognize their need for recovery and respond by entering a state of physical relaxation and psychological detachment from stressors.

Lack of time is a source of contemporary stress, resulting from increased sociocultural pressures toward speed, productivity, and achievement in the three major life domains (ie, work, home/family, leisure).[1] Unfortunately, this creates a situation where it is difficult for many people to find time to rest and recover from the stresses of life, although it is essential to well-being because stress is linked to heart disease, immune deficiency, musculoskeletal disorders, gastrointestinal difficulties, respiratory disorders, sleep and sexual dysfunction, as well as many psychological disorders.[2,3]

People experience stress when they perceive the loss (or threat of loss) of the essential resources that they strive to retain, protect, and build, according to conservation of resources (COR) theory. COR theory identifies time as a critical resource, not so much its intrinsic worth, but for its instrumental value in acquiring other desired resource.[4] Time is a finite resource for which many life activities concurrently compete.[5,6] Lack of time is a ubiquitous source of stress, and research shows that many people do not have enough time in their lives for all the activities they want to do.[7–13]

Much of the research on time from the work–family and occupational health literatures operationalizes it quantitatively as the number of hours allocated to the work and family domains. Work hours have been found to be associated with work-to-family and work-to-life conflict,[14–17] and predict ill health, fatigue, and poor health behaviors.[18–21] In the home/family domain, long hours spent in family carework and housework predict family-to-work conflict[14,15] and detrimental mental and physical health outcomes, especially for women.[22,23]

In addition to quantitative measures of hours, researchers have used qualitative measures of time, because the way people experience time is highly subjective.[7,24–28] One subjective construct is *time pressure*, the experience of feeling excessively rushed, busy, or short on time.[29,30] Employees routinely experience work time pressure and its negative outcomes,[31,32] including stress,[33] overload,[26] emotional exhaustion,[34] work absenteeism,[35] musculoskeletal symptoms,[36] and physical and mental health problems.[37]

The home/family domain is also susceptible to time pressure.[38] Since the late 1960s, it has been recognized that unpaid labor (ie, household chores, family carework) is in many ways analogous to paid work because it requires comparable amounts of time and energy and makes similar contributions to the economy.[9,39] Home/family demands have increased in recent years with more intensive parenting practices or ''hyper-parenting,''[40–42] as well as upgraded standards for maintaining households (ie, cleanliness, nutrition, aesthetics).[13] The effects of time pressure associated with *home/family work* (defined in this study as household chores and family carework) have not been examined in previous research.

HOW RECOVERY MITIGATES STRESS

One way to mitigate stress is through recovery. The effort-recovery model[43] explains that the expenditure of physical and mental effort at work places a load on people's psycho-biological systems that become taxed, as they attempt to meet the demands of their workload. Recovery takes place when exposure to task demands ceases and psycho-biological systems return to pre-stressor levels. If the workload is excessive in intensity or duration and does not allow recovery, it may exceed people's maximum capacity and negative effects can result from the overload.[44] Insufficient recovery is associated with poor work outcomes, decreased physical and mental well-being, fatigue, and burnout. [43,45–49]

Research shows that for many people, recovery opportunities are insufficient, constrained, or absent. For example, although vacations can offer an important recovery opportunity,[40–53] they occur infrequently (if at all), and they are of limited value in alleviating everyday stresses. Moreover, their beneficial effects fade quickly, with work and well-being outcomes returning to pre-vacation levels within 3 to 4 weeks.[54,55]

Research on more routinely occurring recovery opportunities, such as during the evening or on weekends, shows that these are not always ideal time for recovery, either. Evening or weekend time may be constrained by work and family demands, and may be spent engaged in activities that are not conducive to recovery.[56–60] People with highly demanding jobs require more time to physiologically unwind during after-work respite, have greater cognitive difficulty switching off work-related thoughts, and feel less personal control over their evening activities, than those with less demanding jobs.[61,62] Those with heavy home/family demands are also constrained in opportunities for after-work recovery, especially women who report higher stress and incomplete unwinding due to a higher household workload than men.[63,64]

Recovery needs and constraints are themes that are echoed in findings from the Leisure Studies literature. In general, people report not having enough leisure time in their lives,[65] and that they want to work less (ie, both paid work and home/family work) to have more time for relaxation and socializing.[12] However, because leisure often takes place only when there is time left over after work and home/family obligations are fulfilled, it may seldom occur for

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busy people.[66–68] This is problematic, given that leisure is an optimal time for recovery and an effective coping strategy.[48,69,70]

Even when people are able to find free time, they do not always use it in a truly leisurely way.[71] One study of leisure perceptions found that although people define leisure as an experience of self-gratification, relaxation, and personal freedom, they feel that their lifestyles are not conducive with experiences of this nature.[72] Leisure researchers explain that the dominant ideals of contemporary society (ie, effort, action, mastery, high personal investment), which are antithetical to classical definitions of leisure, have paradoxically become central to our present conceptualization of leisure.[66,67] The Leisure Studies literature itself has increasingly emphasized the intensity of leisure (optimal experience, serious leisure).[73–75] Another shift, toward more density in leisure time, has been observed by researchers who note that post-modern culture's promise of infinite new experiences has resulted in leisure becoming overcrowded with closely packed activities.[76] This use of leisure time keeps people harried and overscheduled, despite opportunities for truly free time and a slower pace.[77]

These studies suggest that it is not merely the *amount* of leisure time a person has, but the *nature* of how their leisure time is spent, that affects recovery and well-being. For example, teachers who are engaged in passive, low-effort activities during free time after work experienced higher before-sleep well-being, while those who are engaged in work-related activities experienced lower well-being.[48] Work activities impede the recovery process by placing an additional drain on resources that have already been spent over the course of the day, while low-effort passive activities allow peoples' systems to return to equilibrium by placing no further demands on the resource pool. Thus, one essential feature of activities that facilitate recovery is that they are relaxing and require little expenditure of effort.

A second essential characteristic of recovery experiences is that they allow people to psychologically detach from sources of stress.[60,78] Not thinking about one's job during vacations improves well-being[55,79,80] and switching off mentally from one's job during the evening is related to well-being before sleep (ie, improved mood, lower fatigue).[58] Again, this occurs because when people do not psychologically detach from work, although they may be physically at home, they continue to draw from the same resources that have already been called upon throughout the workday. This impedes recovery and perpetuates the adverse effects of work-related stressors.

DOWNTIME AS SELF-CARE AND THE ROLE OF CONTROL

The studies cited in the previous section cover a variety of recovery vehicles (ie, vacations, evenings, weekends, leisure) that are not always available or conducive to recovery. In this study, we propose a novel vehicle for recovery that we refer to as *downtime*, characterized by a state of physical relaxation and psychological detachment that can occur within any of three major life domains: paid work, home/family work, leisure. The benefits of physical relaxation and psychological detachment for recovery are known[59] but have never been examined together. Also, though most research examines after-work recovery, and some research examines during-work recovery (ie, micro breaks),[81] no study has examined recovery in all major life domains.

We conceptualize downtime in the paid work and home/family work domains similarly; as *a self-care behavior*[82,83] used when a person is laboring to fulfill life demands (ie, paid work, home/family work) and becomes aware that they need recovery; they ''take downtime'' by temporarily ceasing their effort by relaxing and detaching with the deliberate intention of restoring their psychobiological systems to a more optimal state of well-being and functionality. We conceptualize downtime in the leisure domain somewhat differently because leisure does not oblige personal effort that drains resources in the same way that paid work and home/family work do, and thus does not require the same cognitive-behavioral strategies for conserving resources. Rather, leisure downtime occurs when a person engages in leisure that is restorative in nature, characterized by the experience of physical relaxation and psychological detachment, and thus conducive to recovery. Leisure downtime can be considered a self-care behavior when it is used to counter unsatisfactory experiences in the other life domains, known as leisure compensation.[84] The perspective of recovery as a form of self-care is new and situates recovery within the larger behavioral health research.[85]

An important new idea inherent in our concepts of work downtime and home/family downtime is that recovery is accessible; it can take place within the very domain that gives rise to stress. We also introduce that recovery can be achieved through self-care behavior,[82] in which people are active agents of their own well-being, conserving and managing their psychobiological resources in a self-aware and timely way, at the very moment they feel in need of recovery. This conceptualization of downtime implies a fairly high degree of agency and control; however, it is important to acknowledge that people's life circumstances and social environments can profoundly shape their self-care decisions and actions. The relationship between control over activities and their recovery potential is just beginning to be addressed in research.[86] For example, a person in a work situation where they are obliged to relinquish control over their time and activities is unlikely to choose to take downtime, no matter how predisposed to self-care or how badly in need of recovery they are. This can be explained with the job demand-control (JD-C) model, which posits that experiences of work stress and coping are best understood as an interaction between a worker's job demands and decision-making latitude.[87]

According to the JD-C model, jobs fall into one of four categories (ie, active, high strain, low strain, passive), each associated with a particular type of risk for strain (see Fig. 1). People with high demands and high control at work (ie, *active jobs*) are under pressure and may need recovery, but have the decision latitude to engage in self-care behaviors such as work downtime. People with high demands and low control at work (ie, *high-strain jobs*) are at risk of overload and also may need recovery, but they lack the decision latitude to take downtime at work. These workers may use leisure downtime to compensate for their work situation.

People with low demands and high control at work (ie, *low-strain jobs*) are at risk of underload because too few demands are placed on their resources. This group can choose to take work downtime, but does not need recovery from work pressures. People with low demands and low control at work (ie, *passive jobs*) are at risk for decreased activity and problem-solving, and learned helplessness. They do not have the decision latitude to choose to take downtime at work, but do not require recovery from work pressures. For people in these low-demand jobs, downtime is not likely to have a beneficial effect.

In the current study, we utilize the E-R and JD-C models in two novel ways. First, we apply the JD-C model specifically to examining the phenomenon of time, given that speed and busyness

		JOB DEMANDS	
		LOW	HIGH
JOB CONTROL	LOW	Passive Jobs *(feel helpless)*	High Strain Jobs *(risk of overload)*
	HIGH	Low Strain Jobs *(risk of underload)*	Active Jobs *(feel motivated)*

FIGURE 1. Job demand-control model.

are leading sources of stress; specifically, we use time pressure as the *job demand* variable, and perceived time control as the *job control* variable. Second, we extend the logic of the E-R and JD-C models beyond the paid work domain, acknowledging that within the home/family work domain, too, task demands necessitate recovery and decision latitude may be perceived as lacking. In both the paid work and home/family work domains, we focus on people who have high time pressure and propose that they are less likely to experience adverse outcomes resulting when they take downtime. We posit that people are more likely to take needed downtime in a domain if they feel they have control over their time in that domain; we also posit, per leisure compensation theory, that when people lack the decision latitude in a domain to take downtime, leisure downtime is beneficial. Our hypotheses are as follows:

Hypothesis 1: Under situations of high work time control, work downtime moderates the relationship of work time pressure with work and home/family outcomes (ie, the relationship is weaker for those who take more work downtime.)

Hypothesis 2: Under situations of low work time control, leisure downtime moderates the relationship of work time pressure with work and home/family outcomes (ie, the relationship is weaker for those who take more leisure downtime.)

Hypothesis 3: Under situations of high home/family time control, home/family work downtime moderates the relationship of home/family time pressures with work and home/family outcomes (ie, the relationship is weaker for those who take more home/family work downtime.)

Hypothesis 4: Under situations of low home/family time control, leisure downtime moderates the relationship of home/family time pressures with work and home/family outcomes (ie, the relationship is weaker for those who take more leisure downtime.).

METHODS

Participants and Procedure

We recruited participants using StudyResponse, an online service (hosted by a northeastern university in the United States), that assists social scientists in obtaining adult research participants by inviting them to partake in web-based surveys. StudyReponse identified eligible study participants in their database and sent them a recruitment email containing an invitation message with a link (URL) to the survey page, maintained by the researchers. The researchers were also accountable for data management, which met IRB requirements. Participants were at least 18 years old, in a variety of occupations, and worked at least 20 hours a week. The survey took 15 minutes to complete, and as an incentive for participation, all survey respondents were entered into a raffle for three $50 gift certificates to an on-line retailer.

A total of 565 people participated in the study represent a response rate of 18.6% (20% is considered a typical response rate according to the StudyResponse service). We eliminated two participants for having missing or incomplete data, 60 respondents who reported fewer than 20 work hours a week, and 81 participants who were non-US residents (because the social construction of time, a focal study construct, is culture-specific).[88] This resulted in an analysis sample of 422 participants. Of the final sample, 72.0% were female, 80% were white, 63% were married or had a life partner, and 39% had children under the age of 18 living with them. The mean age was 39.9 years (SD = 10.9), the average workweek was 44.8 hours (SD = 11.6), and the average time spent doing home-family work was 20 hours (SD = 18.5). We did not collect data on weekly leisure hours. Twenty-four percent of the sample reported working in professional occupations; another 19% reported working in management, business, and financial operations. Eighteen percent reported working in office or administrative support positions, and 39% worked in education, sales, services, and other occupations.

Study Measures

Unless otherwise indicated, participants responded using a 5-point Likert scale that ranged from 1 (*strongly disagree*) to 5 (*strongly agree*).

Work and Home/Family Work Time Pressure

Work time pressure was assessed with a four-item measure (Stress Diagnostic Survey).[89] Participants were given the prompt: ''How much do you agree or disagree with the following statements? When it comes to my work,'' followed by four items. A sample item was ''I am constantly working against the pressure of time.'' A recent study that used this measure reported a coefficient alpha of 0.89.[24] Home/family work time pressure was assessed using a parallel measure to the scale just described; it was adapted for the home/family domain with the prompt ''When it comes to my home life (chores, family, personal)'' followed by the same four items. A recent study that used this measure reported a coefficient alpha of 0.90.[24]

Perceived Control of Time at Work and in Home/Family Work

Perceived control of work time was assessed with a five-item measure ($\alpha = 0.73$).[90] Participants were given the prompt: ''How much do you agree or disagree with the following statements? When it comes to my work'' followed by five items. A sample item was ''I find it difficult to keep to my schedule because others take me away from what I am doing.'' Perceived control of home/family work time was assessed with a parallel version of the measure just described, adapted for assessing the home/family domain with the prompt: ''When it comes to my home life (chores, family, personal)'' followed by the same five items.

Work and Home/Family Work Stress

Work stress was assessed with a measure that instructs respondents to consider whether 15 words or phrases describe their work; sample items were ''demanding,'' ''hassled,'' and ''hectic.'' (Stress in General; $\alpha = 0.91$).[91] Each item was rated with a 0 (no), 1.5 (cannot decide), or 3 (yes), and a score was calculated by summing ratings across the items. Home/family work stress was assessed using a parallel measure that we created with the same 15 items and rating scale; however, this version instructed respondents to consider whether the items described their home life (ie, chores, family, personal).

Work Outcomes

Job satisfaction was assessed using a three-item measure ($\alpha = 0.77$)[92]; a sample item was ''All in all, I am satisfied with my job.'' Turnover intentions were assessed using a three-item measure ($\alpha = 0.83$)[92]; a sample item was ''I often think about quitting my job.''

Life Satisfaction

Life satisfaction was evaluated using a measure that required respondents to rate their satisfaction with various nonwork facets of life ($\alpha = 0.88$),[93] such as ''family life'' and ''leisure activities.'' We added five items to tap into satisfaction with additional life facets, including emotional health, spiritual life, and community involvement. Respondents rated the 15 items from 1 (*very dissatisfied*) to 5 (*very satisfied*), and ratings were summed across the items to calculate a summary index.

Work and Home/Family Work Downtime

Work downtime was assessed with an original four-item measure that asked respondents to rate the extent to which they engaged in downtime behavior at work when they felt in need of recovery. Items were ''I switch off mentally from my responsibilities to refresh myself,'' ''I set aside my work obligations to get

my mind off of job pressures for a while,'' ''I do not stop my work duties for time to rest and relax,'' and ''I take time out to do some low-effort activities I like to do.'' The last two items were reverse-coded.

Home/family work downtime was assessed with a parallel version of the work downtime measure, modified by instructing respondents to rate the extent to which they engaged in downtime behavior when they felt in need of recovery during household chores or family carework. Items were ''I switch off mentally from my responsibilities to refresh myself,'' ''I set aside my household obligations to get my mind off the pressures of chores or family for a while,'' ''I do not stop my household and/or family for time to rest and relax,'' and ''I take time out to do some low-effort activities I like to do.'' The last two items were reverse-coded.

Leisure Downtime

Leisure downtime was assessed using an original eight-item measure designed to evaluate the extent to which leisure time is, in fact, leisurely. Participants were instructed to think of leisure time as distinct from time allocated to the work and home/family work domains (ie, *not* directly involved with the demands of work, household chores, or family carework); it was specified as being time for self-care, recreation, hobbies, socializing, or community. Sample items were ''relaxing,'' ''peaceful,'' and ''refreshing'', and respondents rated items from 1 (*not at all*) to 5 (*extremely*), in terms of how well it described their leisure time.

Control Variables

We used few control variables, in keeping with current recommendations suggesting a parsimonious approach to controls.[94,95] Our inclusion of weekly hours doing paid work and home/family work as a control variable is based on the rationale, confirmed by other research,[24] that quantitative measures of time are distinct from qualitative measures, and that a full understanding of time-based stress is best achieved by including both. In all analyses, we controlled for the number of weekly work hours and home/family work hours, as well as time pressure from the other life domain. Although it has been associated with many of the variables in this study, we opted not to include gender as a control variable as our use of domain hours precludes it; *t*-tests showed that gender was significantly associated with only a few study variables including domain hours (women reported fewer work hours and more home/family hours than men.)

Number of weekly work hours was assessed with a single item measure (open-ended response) asking, ''How many hours do you typically work every week (ie, work at job, from home, overtime, second job, commute, work travel, and career development activities)?'' Number of weekly home/family work hours was assessed with a single item measure asking, ''How many hours of chores and/or care-giving do you typically do every week (ie, home-related chores, cooking, finances, child care, elder care, shopping, errands, yard/home/car maintenance)?''

RESULTS

For all major study variables, the means, standard deviations, reliabilities, and intercorrelations are reported in Table 1. Coefficient alphas for all measures included in this study showed acceptable internal consistency (ranging from 0.72 to 0.93). An examination of bivariate relationships in the correlation matrix showed, as expected, higher correlations within groups of related variables such as those pertaining to the work domain or the home/family work domain. It should be pointed out that the constructs that were measured in a parallel fashion (ie, time pressure, time control, and stress) in two domains (ie, paid work, home/family work) were not highly correlated. Furthermore, none of the intercorrelations for variables were so strong as to imply problems with multicollinearity. Bivariate relationships showed that work time pressure was positively correlated with the outcomes of work stress and turnover intent; it was negatively related to job satisfaction and life satisfaction. Home/family time pressure was positively correlated with work stress, turnover intent, and home/family stress; it was negatively related to job satisfaction and life satisfaction.

To test downtime moderation hypotheses at high and low levels of work time control (Hypotheses 1 and 2), we split the sample at the median (3.60) into low and high work time control, and then used the moderated regression procedures recommended by Baron and Kenny[96] to detect effects in each situation. The regression analysis described in the following paragraph was conducted for each of the five dependent variables in turn.

Consistent with Hypothesis 1, in the *high work time control* situation, control variables were entered in the first step (ie, work hours, home/family work hours, home/family work time pressure). The main effect of work time pressure was entered in the second step, then the main effect of work downtime in the third. The cross-product interaction term (work time pressure x work downtime) was entered in the fourth step. As recommended by Aiken and West,[97]

TABLE 1. Means, Standard Deviations, Alphas*, and Intercorrelations for Major Study Variables

Variable	Mean	SD	Min	Max	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1. Work Hours	44.8	11.7	20	96	—													
2. Home/Family Work Hours	20.0	18.5	0	100	−0.20[b]	—												
3. Work Time Pressure	2.6	1.0	1	5	0.17[b]	−0.16[b]	(0.91)											
4. Home/Family Time Pressure	2.5	1.0	1	5	0.03	0.28[b]	0.12[a]	(0.89)										
5. Work Time Control	3.5	0.8	1	5	−0.11[a]	0.08	−0.67[b]	−0.18[b]	(0.77)									
6. Home/Family Time Control	3.6	0.8	1	5	0.00	−0.26[b]	−0.08	−0.72[b]	0.25[b]	(0.82)								
7. Work Stress	22.2	12.6	0	45	0.18[b]	−0.10	0.62[b]	0.13[b]	−0.65[b]	−0.14[b]	(0.90)							
8. Job Satisfaction	3.7	1.0	1	5	−0.06	−0.03	−0.31[b]	−0.12[a]	0.46[b]	0.19[b]	−0.44[b]	(0.83)						
9. Turnover Intent	2.6	1.2	1	5	−0.02	0.07	0.30[b]	0.13[b]	−0.41[b]	−0.18[b]	0.35[b]	−0.73[b]	(0.83)					
10. Home/Family Stress	12.5	12.6	0	45	−0.05	0.33[b]	0.01	0.53[b]	−0.12[a]	−0.61[b]	0.15[b]	−0.13[b]	0.11[a]	(0.93)				
11. Life Satisfaction	53.3	10.1	15	75	0.07	−0.05	−0.13[b]	−0.26[b]	0.27[b]	0.48[b]	−0.21[b]	0.31[b]	−0.29[b]	−0.46[b]	(0.88)			
12. Work Downtime	3.0	0.9	1	5	−0.02	−0.06	−0.15[b]	−0.07	0.12[a]	0.07	−0.17[b]	0.14[b]	−0.08	−0.05	0.16[b]	(0.76)		
13. Home/Family Downtime	3.3	0.8	1	5	−0.06	−0.20[b]	0.04	−0.18[b]	−0.02	0.10[a]	−0.03	0.05	−0.03	−0.14[b]	−0.02	0.28[b]	(0.72)	
14. Leisure Downtime	2.9	0.8	1	5	0.02	−0.31[b]	−0.10[a]	−0.35[b]	0.21[b]	0.38[b]	−0.21[b]	0.24[b]	−0.22[b]	−0.41[b]	0.33[b]	0.21[b]	0.30[b]	(0.92)

*Alphas reported along diagonal.
[a]$P < 0.05$.
[b]$P < 0.01$, two-tailed test.

TABLE 2. Regression Analyses Evaluating Work and Leisure Downtime as Moderators for Work Control Subgroups

High Control of Work Time (Hypothesis 1)

		Work Stress		Job Sat.		Turnover		Home/Family Stress		Life Sat.	
Predictor		**β**	**ΔR^2**	**β**	**ΔR^2**	**β**	**ΔR^2**	**β**	**ΔR^2**	**β**	**ΔR^2**
Step 1:	Control Variables		0.03		0.02		0.04[a]		0.31[c]		0.06[b]
	Work Hours	0.12		−0.07		0.00		0.02		0.11	
	Home/Family Work Hours	0.04		−0.09		0.15[a]		0.23[c]		−0.02	
	Home/Family Time Pressure	−0.02		−0.06		0.10		0.48[c]		−0.21[b]	
Step 2:	Main Effect		0.16[c]		0.00		0.00		0.01		0.01
	Work Time Pressure	0.41[c]		0.04		0.05		−0.09		0.11	
Step 3:	Main Effect		0.01		0.01		0.00		0.00		0.01
	Work Downtime	−0.18[a]		0.18[a]		−0.17[a]		0.00		0.03	
Step 4:	Interaction Effects		0.01		0.01		0.02[a]		0.01		0.00
	Work Time Pressure X Work Downtime	−0.12		0.15		−0.19[a]		−0.11		−0.07	

Low Control of Work Time (Hypothesis 2)

		Work Stress		Job Sat.		Turnover		Home/Family Stress		Life Sat.	
Predictor		**β**	**ΔR^2**	**β**	**ΔR^2**	**β**	**ΔR^2**	**β**	**ΔR^2**	**β**	**ΔR^2**
Step 1:	Control Variables		0.06[b]		0.01		0.00		0.34[c]		0.09[c]
	Paid Work Hours	0.13[a]		0.00		-0.07		−0.01		0.08	
	Home/Family Work Hours	−0.13		−0.01		0.00		0.12		0.14	
	Home/Family Time Pressure	0.04		−0.10		0.07		0.46[c]		−0.23[b]	
Step 2:	Main Effect		0.18[c]		0.10[c]		0.08[c]		0.01		0.00
	Work Time Pressure	0.40[c]		−0.29[c]		0.25[c]		−0.11		−0.01	
Step 3:	Main Effect		0.05[c]		0.02[a]		0.01		0.03[b]		0.05[b]
	Leisure Downtime	−0.29[b]		0.01		0.07		−0.13		0.23[a]	
Step 4:	Interaction Effects		0.01		0.02[a]		0.04[b]		0.01		0.00
	Work Time Pressure X Leisure Downtime	0.05		0.20[a]		−0.27[b]		−0.10		0.02	

Note: $N = 422$. Standardized regression coefficients (β) reported corresponds with this step in the regression.
[a] $P < 0.05$.
[b] $P < 0.01$.
[c] $P < 0.001$ (two-tailed).

main effects and interaction effects were centered. A significant R^2 change after the addition of the interaction term indicated moderation, and the form of each interaction was plotted to determine if it was consistent with Hypothesis 1. The same procedure was used to test Hypothesis 2, which examined leisure downtime under the *low work time control* situation.

As predicted by Hypothesis 1, results showed (see Table 2) that when people perceived high control over time at work, work downtime acted as a buffer of work time pressure against the outcomes of turnover intent (β = -0.19, $P < 0.05$). When the form of the interaction was plotted for the subgroup with high work control (see Fig. 2), it revealed that at low levels of work time pressure, the amount of work downtime taken did not have any impact, but at high levels of work time pressure, low work downtime was associated with poorer outcomes and high work downtime was associated with better outcomes. It should be noted that we ran post hoc analyses showing that work downtime did not have any buffering effects for the low work time control subgroup.

As predicted by Hypothesis 2, results showed (see Table 2) that for those who perceived low control over time at work, leisure downtime acted as a buffer for job satisfaction (β = 0.20, $P < 0.05$) and turnover intent (β = -0.27, $P < 0.01$). As illustrated in Fig. 3, at high levels of work time pressure, high leisure downtime was associated with better outcomes. However, at low levels of work time pressure, high leisure downtime was associated with poorer outcomes. Again, we ran post hoc analyses showing that leisure downtime did not have any buffering effects for the high work time control subgroup.

Similar to Hypotheses 1 and 2, which examined downtime's effects on stress originating in the work domain, Hypotheses 3 and 4 identically examined these relationships within the home/family domain. Specifically, to test Hypothesis 3 regarding the *high home/family work time* control situation, we ran one regression for each of the five outcomes. Control variables were entered in step 1, home/

FIGURE 2. Moderating effect of work downtime among participants with high work time control.

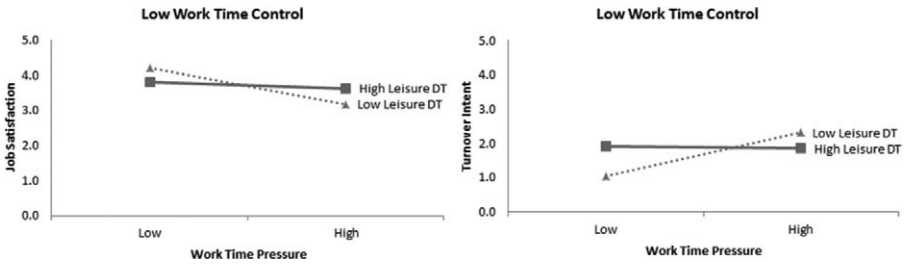

FIGURE 3. Moderating effect of leisure downtime among participants with low work time control.

family work time pressure in step 2, home/family work downtime in step 3, and the interaction term in step 4. The same procedure was used to test Hypothesis 4, regarding the effect of leisure downtime under the *low home/family work time control* situation.

As predicted by Hypothesis 3, results showed (see Table 3) that when people had high control over time at home, home/family work downtime acted as a buffer of home/family work time pressure against turnover intent ($\beta = -0.22$, $P < 0.05$), home/family work stress ($\beta = -0.28$, $P < 0.01$), and life satisfaction ($\beta = 0.22$, $P < 0.05$). Figure 4 shows that at low levels of home/family work time pressure, the amount of home/family work downtime taken did not have a strong impact, while at high levels of time pressure, low home/family work downtime was associated with poorer outcomes. Post hoc analyses indicated that home/family work downtime did not have a buffering effect for the low home/family work time control subgroup.

As predicted by Hypothesis 4, results showed (see Table 3) that for those with low control over home/family time, leisure downtime acted as a buffer of home/family work time pressure against turnover intent ($\beta = 0.16$, $P < 0.05$) and life satisfaction ($\beta = 0.21$, $P < 0.01$). The interaction (see Fig. 5) showed that in situations of low home/family control, at low levels of home/family time pressure, high leisure downtime was associated with lower turnover intent, while at high levels of home/family time pressure,

TABLE 3. Regression Analyses Evaluating Home/Family and Leisure Downtime as Moderators for Home/Family Control Subgroups

High Control Home/Family Work Time (Hypothesis 3)

		Work Stress		Job Sat.		Turnover		Home/Family Stress		Life Sat.	
Predictor		**β**	**ΔR^2**	**β**	**ΔR^2**	**β**	**ΔR^2**	**β**	**ΔR^2**	**β**	**ΔR^2**
Step 1:	Control Variables		0.42[c]		0.13[c]		0.11[c]		0.09[c]		0.02
	Paid Work Hours	0.05		−0.04		0.00		−0.11		0.08	
	Home/Family Work Hours	0.02		−0.11		0.09		0.23[b]		0.05	
	Work Time Pressure	0.66[c]		−0.36[c]		0.32[c]		0.00		−0.09	
Step 2:	Main Effect		0.01		0.00		0.00		0.05[b]		0.00
	Home/Family Time Pressure	−0.11		0.04		0.00		0.24[c]		0.01	
Step 3:	Main Effect		0.00		0.01		0.01		0.02[a]		0.00
	Home/Family Downtime	0.01		0.05		−0.22[a]		−0.31[c]		0.11	
Step 4:	Interaction Effects		0.00		0.00		0.03[a]		0.05[b]		0.03[a]
	Home/Family Time Pressure X Home/Fam Downtime	0.00		−0.04		−0.22[a]		−0.28[b]		0.22[a]	

Low Control of Home/Family Work Time (Hypothesis 4)

		Work Stress		Job Sat.		Turnover		Home/Family Stress		Life Sat.	
Predictor		**β**	**ΔR^2**	**β**	**ΔR^2**	**β**	**ΔR^2**	**β**	**ΔR^2**	**β**	**ΔR^2**
Step 1:	Control Variables		0.37[c]		0.09[c]		0.10[c]		0.08[c]		0.04[a]
	Paid Work Hours	0.12[a]		−0.01		−.08		0.03		0.12	
	Home/Family Work Hours	−0.08		0.00		0.07		0.13		0.09	
	Work Time Pressure	0.55[c]		−0.27[c]		0.29[c]		−0.02		−0.14[a]	
Step 2:	Main Effect		0.01		0.00		0.00		0.10[c]		0.02
	Home/Family Time Pressure	0.03		−0.05		0.07		0.26[c]		−0.02	
Step 3:	Main Effect		0.03[b]		0.02[a]		0.01		0.04[b]		0.08[c]
	Leisure Downtime	−0.20[b]		0.21[a]		−0.20[a]		−0.19[a]		0.19[a]	
Step 4:	Interaction Effects		0.00		0.01		0.02[a]		0.00		0.03[b]
	Home/Family Time Pressure X Leisure Downtime	0.04		-0.12		0.16[a]		−0.06		0.21[c]	

Note: $N = 422$. Standardized regression coefficients (β) reported corresponds with this step in the regression.
[a] $P < 0.05$.
[b] $P < 0.01$.
[c] $P < 0.001$ (two-tailed).

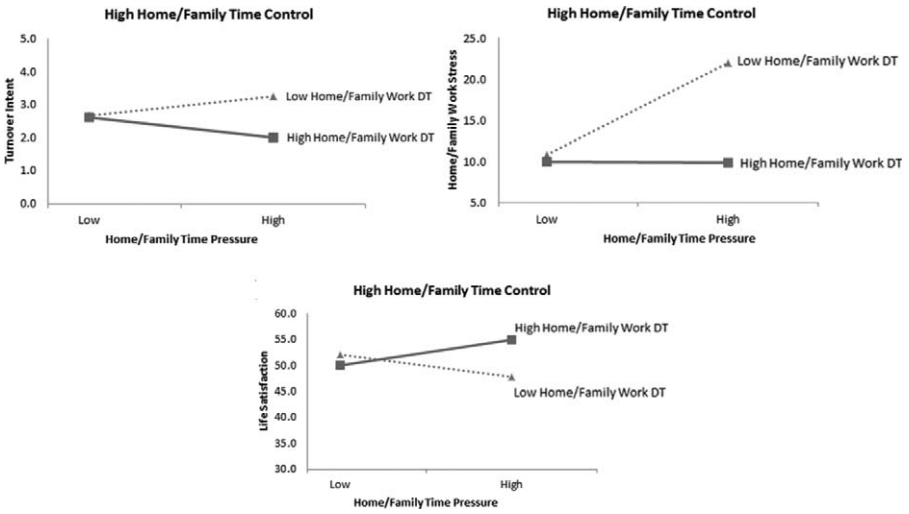

FIGURE 4. Moderating effect of home/family work downtime among participants with high home/family work time control.

high leisure downtime was associated with higher life satisfaction. Post hoc analyses showed no buffering effect of leisure downtime for the high home/family time control subgroup.

DISCUSSION

In this study, we examined the stressor of time pressure, because the current sociocultural environment has infused every life domain, including work, home/family, and leisure, with constant busyness and speed.[98–100] A novel contribution to existing research, we treated home/family work (ie, household chores, family care-work) as an analog of paid work, positing that it is similarly susceptible to time pressure, can be lacking in decision latitude, and necessitates recovery; the ER and JD-C models have not previously been applied to the home/family domain. We found that in addition to the paid work domain, time pressure occurs in the home/family work domain and is associated with a different set of outcomes from paid work. This confirms that some people require recovery from their home/family work as well as from their jobs. In both the paid work and home/family work domains, the adverse effects of time pressure were found to be independent of the number of hours spent on the job or in home/family work, confirming that *how time is experienced* should be a special focus of stress research, not simply *the amount of time* spent in a particular activity.[24]

This is an important topic to examine in further research, as our sample represented people with only a moderate level of time pressure in both domains. For those under more severe time pressure (ie, due to more demanding jobs and/or more intense home/family obligations), the effects on outcomes may be even more acute. Future studies should also consider a total workload approach, examining the effects of a person's cumulative workload (ie, both paid work and home/family work) on various outcomes,[64] rather than analyzing the domains separately. The cumulative demands of work and home/family can create a constant stream of obligations for people to contend with, for which they never have enough time, potentially resulting in chronic overload.[17,101]

In this study, we acknowledged that time spent in home/family or leisure activities is not always amenable to recovery, and we introduce an accessible form of recovery, *downtime*, defined as a self-care behavior enacted through simultaneous physical relaxation and psychological detachment, taken for the purposes of attaining recovery in any of the life major domains (ie, work, home/family work, leisure). One beneficial aspect of our downtime concept is that it is cognitive-behavioral in nature, and can be learned. It also is a highly accessible form of recovery with optimal timing that people can enter into wherever and whenever their resources are in need of replenishment, rather than having to delay recovery until temporally distant weekends or vacations. It also allows people to recover from routine work and home/family demands on a frequent basis, preventing the wear and tear of sustained activation.[44]

Our study also makes an innovative contribution to existing research by applying the logic of the JD-C model specifically to the phenomenon of time, and by examining forms of recovery in context, examining the situations under which different forms of downtime are most beneficial. We found that downtime's buffering of time pressure is related to the domain in which it was taken, as well as peoples' perceptions of control over time in the domain. In the work domain, for people who had high levels of time control, work downtime buffered against adverse outcomes at higher levels of work time pressure, but had no effect at lower levels of time pressure. Explained with the JD-C model, the high-demand/high-

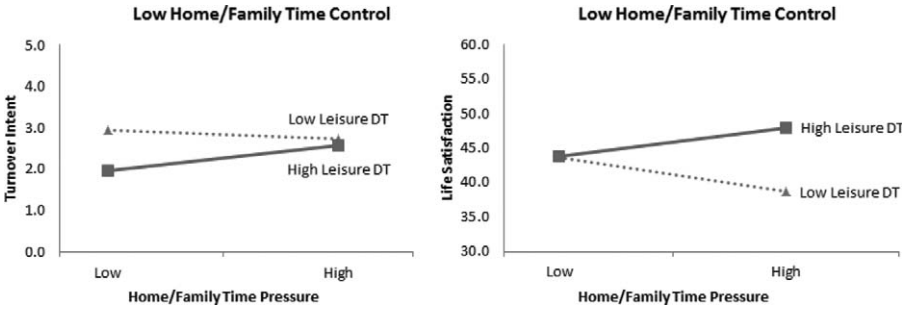

FIGURE 5. Moderating effect of leisure downtime among participants with low home/family work time control.

control group uses control to solve problems (eg, by taking downtime when needed), while the low-demand/high-control group is not in need of downtime recovery.

For people with low work time control and high time pressure, leisure downtime buffered against adverse work outcomes. As the JD-C model suggests, this group is at risk for overload at work, but because it does not have the decision latitude to take downtime in the work domain, the leisure domain compensates as a viable recovery alternative. It is interesting that the low work control/low time pressure group experienced worse outcomes when leisure downtime was relaxing and disengaging (see Fig. 3). The JD-C model would suggest that this group feels apathetic and lacks agency; interestingly, our findings point to the possibility that active and stimulating leisure during nonwork time might be beneficial for alleviating strain characterized by underload. Indeed, some research has found that effortful activities involving challenge, learning, and achievement are beneficial forms of recovery (mastery experiences)[59]; however, mastery activities have not been studied in context. Further research should fully examine the people for whom and situations in which mastery and other recovery experiences are best; a person who feels physical and emotionally drained after a day engaged in mastery activities at work may need detached and relaxing downtime after work.

We also applied the JD-C model to the home/family domain and our results supported our novel application of the model. In the home/family work domain, for people who had high levels of time control, home/family downtime (ie, taking a rest when needed during household chores and family carework) buffered against adverse outcomes at higher levels of home/family time pressure, but had no effect at lower levels of time pressure. Again, this is consistent with the JD-C model, in which the high-demand/high-control group uses control to solve problems (eg, taking downtime), while the low-demand/high-control group is not in need of recovery.

For people with low home/family time control and high time pressure, leisure downtime buffered against poor life satisfaction, while at lower levels of time pressure, it had no effect. This can be interpreted similarly to previous findings (ie, people who cannot take downtime when they need it can compensate by having leisure downtime). Regarding the outcome of turnover, however, the form of the interaction was very different than the pattern previously seen. Under situations of low home/family work time control, leisure downtime had the most benefit (ie, lower turnover) at low, rather than at high levels pressure, as one might expect.

IMPLICATIONS

The current study has implications for workers who are struggling to manage time pressures at work and home. Given the many work and well-being outcomes associated with time pressure, there are also implications for employing organizations, who may be concerned with health care costs, absenteeism, turnover, and employee performance. This study can inform the development of new interventions at both the individual and organizational levels, aimed at improving Total Worker Health in both work and personal life.[102] Organizational interventions that alleviate stress and work-life conflict include flexible work arrangements (ie, telecommuting, flextime) and work-life services (ie, dependent care, personal assistance), but there are very few that specifically address time-based stress and control (eg, results-only work environment initiatives).[103] Organizations may also provide recovery opportunities for workers by instituting rest break policies.[104,105]

Individual-level interventions for improving worker well-being include employee assistance and health promotion programs. Although stress management is a standard component of most health promotion programs, few trainings[106] address the adverse effects of time pressures at work and home, the need for recovery, types of recovery, or the best times and places to take engage in recovery. We envision the next phase of our research to include the design and evaluation of a stress management training that specifically incorporates the findings of this study, teaching workers to become more instrumental in preventing and managing their stress by monitoring their own well-being and using downtime as a self-care behavior. It will teach self-awareness, training workers to be cognizant of how often and severely they experience time pressure (ie, feeling rushed, busy, overscheduled) in each life domain, their own sources of pressure (ie, self, a specific person, or the environment), and the ways that time pressure affects their own well-being. It will teach self-regulation, encouraging workers become aware of and slow down their pace and to intentionally build unstructured downtime in their schedules, as well as time for leisure activities that are conducive to recovery.[107–109] The training will teach workers that downtime is an accessible state of physical relaxation and psychological detachment that allows them to unwind, feel refreshed, and be restored to optimal functioning, ready to effectively reengage with their commitments. It will also educate workers about the most effective forms of downtime for certain situations, for example, to take downtime when they have high time pressure and high control, and to make sure their leisure time is relaxing when they have high time pressure and low control.

LIMITATIONS

The current study has several limitations. Although we only examined the stressor of time pressure, it would be useful to explore other sources of stress (eg, physical and cognitive overload, marital dissatisfaction, financial stress) and whether downtime also buffers these sources of stress. Also, we compared the work and home/family work domains in a parallel fashion in this study, but there are many dissimilar aspects of work and family (ie, the domain boundaries are not symmetrically permeable)[110] and conclusions drawn from these assumptions of symmetry that should be researched further. We also did not take into consideration that in some circumstances, time pressure may be beneficial (eg, as a challenge stressor motivating a person to get a task done), and that downtime in the work and home/family domains may be counter-productive (eg, if a person is using it to avoids getting things done.)

Regarding methodology, our downtime measures (created for this study) require further development; a rigorous validation study is needed to clarify how downtime is similar and different from known recovery constructs. Also, in addition to assessing downtime behavior, measures of downtime quality in the work and home/family domains should be utilized in the future, to evaluate whether that time is truly leisurely. Another concern is the cross-sectional study design, which prevents the inference of causal relationships. Future studies should employ a longitudinal design to assess causal links between time pressure, downtime, and outcomes. Our design and variable measurement at one point in time also limits our ability to explain recovery processes related to routinely occurring stresses that change on a daily basis; diary methods or experience sampling would be useful to employ in a future study.[111] Lastly, self-report survey methodology can pose limitations due to mono-method bias. Of particular concern is that correlations among variables may become inflated, though an examination of the correlation matrix suggests that this is not the case with this study. However, there is merit in using a survey format for studies that measure individual perceptions of work and home/family life; it is often the most feasible way to gather information from a large population of participants. Moreover, some research has suggested that the problem of mono-method bias is overstated.[112] Alternative sources of information could be considered in future studies, such as work supervisors, coworkers, family members, and health professionals. A future study should also consider using objective stress measures (eg, cortisol, heart rate) that could be assessed using mobile technology (eg, passive data-collecting sensors) rather than only relying on subjective perceptions, which are subject to bias.

CONCLUSION

Notwithstanding these limitations, the results of this study are important. They suggest that downtime recovery can be an effective buffer against time pressures. It is an accessible vehicle for recovery, not limited by time (eg, evenings), place (eg, at home), or occasion (eg, vacation), but available anywhere and anytime, as long as a person recognized their need for recovery and responds by entering a state of physical relaxation and psychological detachment from stressors. We explained how downtime is limited by control. Taking downtime in a domain where recovery is needed is constrained by the level of control people feel they have in that domain; when control is low, recovery in the leisure domain appears to be the best alternative. Downtime is also likely not a solution for all forms of stress, particularly stress characterized by underload. However, the downtime concept has great merit and should be examined more fully in future research.

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