SGS SOUTHERN GERONTOLOGICAL SOCIETY

Journal of Applied Gerontology
2020, Vol. 39(4) 357–367

DOI: 10.1177/0733464819870034
journals.sagepub.com/home/jag
SAGE

Acquired and Persistent Eldercare Demands: Impact on Worker Well-Being

Alicia G. Dugan[1], Janet L. Barnes-Farrell[2], Richard H. Fortinsky[1], and Martin G. Cherniack[1]

Abstract

Eldercare demands (ECD) may result in stress when finite resources needed to fulfill life roles (i.e., family, work) become scarce. ECD may be acquired, continue over time, or be relinquished. They thus may represent acute stress (immediate, severe) or chronic stress (persistent, milder). Workers at six U.S. manufacturing companies completed surveys (N = 520). ECD were operationalized as providing assistance to an adult aged 65+ years due to disability or illness. Workers were categorized into four ECD groups (persistent, relinquished, acquired, and none), and we examined the ECD groups' association with person-centric and work-centric outcomes. Respondents with acquired ECD had worse mental health and greater depressive symptoms than those with none, and those with persistent ECD had greater work stress and family–work conflict than those with none. Findings suggesting that acute stress is more related to person-centric outcomes and chronic stress is more related to work-centric outcomes could inform development of tailored interventions.

Keywords

manufacturing workers, informal caregiving, eldercare, conservation of resources, mental health, depressive symptoms, sleep quality, work stress, family–work conflict, job performance

According to a recent report cosponsored by the National Alliance for Caregiving and the AARP Public Policy Institute (2015), approximately 34 million Americans provide unpaid care to adults aged 50 years or older. The bulk of those care providers juggle informal caregiving responsibilities, which in this article we term as *eldercare demands* (ECD), with the demands of full-time employment. Along with the well-recognized challenges of managing childcare demands and work demands, ECD among American workers are receiving increased attention from researchers, employers, and policy makers (National Academies of Sciences, Engineering, and Medicine, 2016), yet, large gaps in knowledge remain regarding this aspect of work–life integration (i.e., integrating personal and work demands). Little is known about ECD and their context *over time* (i.e., the interplay between the history of caregiving, workplace changes, and life events such as work leave and retirement that occur over the caregiving period) and consequences of the temporal context for workers' well-being inside and outside of work. This is relevant because ECD represent a role responsibility that may be acquired (or not), continue over a period of time, or be relinquished.

This article explores how the acquisition, relinquishment, and importantly, the chronicity of ECD over time are associated with personal and work-related well-being outcomes. We first ground our study using conservation of resources (COR) theory, explaining eldercare as a life role demand that competes with other life role demands (job demands, childcare demands) for people's resources, taking into account the cumulative effect of ECD and other role demands on personal and work outcomes. We then review literature related to ECD and its impact on work and well-being. Finally, we examine ECD as an acute and chronic stressor, to increase our understanding of resource sustainability and provide context needed for developing targeted interventions.

Review of Literature

Per COR theory, people experience stress when their finite personal resources (e.g., time, energy) are lost or threatened (Hobfoll, 1989). The greater the number of life roles (work, family) people have, the less likely they are to be successful in those roles, because resources needed to fulfill role

Manuscript received: December 14, 2018; **final revision received:** July 19, 2019; **accepted:** July 25, 2019.

[1]UConn Health, Farmington, CT, USA
[2]University of Connecticut, Storrs, USA

Corresponding Author:
Alicia G. Dugan, Department of Medicine, Division of Occupational and Environmental Medicine, UConn Health, 263 Farmington Ave., Farmington, CT 06030, USA.
Email: adugan@uchc.edu

demands become more scarce (Goode, 1960; Kirchmeyer, 1992; Marks, 1977). People may experience interrole conflict (e.g., work–family conflict) when various life roles place demands (e.g., job demands, child care) on and compete for the same finite resources (Grandey & Cropanzano, 1999). Our use of the term *eldercare demands* is rooted in this resources-based perspective. Informal elder caregiving, often associated with beneficial experiences of loving connection, esteem, gratification, and meaning (Kramer, 1997; Marks, Lambert, & Choi, 2002), is nevertheless a family role responsibility that, like childcare, demands resources that might otherwise be used to fulfill other life roles.

Various studies have linked ECD to stress and strain, decreased psychological health (including depression), poor subjective well-being, and diminished physical health (Burch, Dugan, & Barnes-Farrell, 2018; Calvano, 2013; Duxbury, Higgins, & Smart, 2011; Pinquart & Sörensen, 2003). Associations have been found between ECD and interrole conflict (i.e., work-to-family, family-to-work) and work-related outcomes including absenteeism, presenteeism, poorer work performance, and lower work engagement (Burch et al., 2018; Gordon, Pruchno, Wilson-Genderson, Murphy, & Rose, 2012). However, few studies take into account the accumulation of work and family role demands that drain a person's resources and potentially affect outcomes, in addition to ECD (Solberg, Solberg, & Peterson, 2014).

Work–family balance can be especially challenging when work and/or family demands are heavy, but eldercare research rarely takes the degree of role demands into account. Although most work–family studies on eldercare are cross-sectional and utilize a binary measure of ECD at one point in time (i.e., either the worker has ECD or not), using measures that assess the level of demand on time and energy resources can yield a fuller understanding of how ECD affect workers (Calvano, 2013). For example, one study of employed caregivers found that providing 5+ hr of eldercare weekly was associated with greater depressive symptoms and providing personal hands-on care (in contrast to administrative-type care) was associated with family-work conflict (Dugan et al., 2016). Other types of resources drained by ECD that would be valuable to measure include physical, emotional, and cognitive resources (Dugan & Barnes-Farrell, 2018; Greenhaus & Beutell, 1985).

Another critical factor in understanding the degree of role demands is examining their chronicity, and to our knowledge, this has not been done in eldercare research. The near-term consequences of taking on new and unfamiliar role responsibilities may be different from those related to maintaining role responsibilities over an extended period of time after some adjustment has occurred. Research on the temporal nature of stress distinguishes acute stress and immediate and severe psychophysiological reactions to actual or perceived threats, from chronic stress responses, which are often milder in nature, but persist over time, eroding psychophysiological resources through sustained activation and insufficient recovery (Geurts & Sonnentag, 2006; Lovallo, 2015; Meijman & Mulder, 1998). This is supported by the job demands-resources model, in which occupational stress results from a worker's job demands exceeding the resources available for meeting those demands, and chronic job demands deplete physical and psychological resources, resulting in health problems (Bakker & Demerouti, 2007). Some empirical studies have examined acute versus chronic stressors in the work domain, including those found in demanding occupations (emergency work; Geurts & Sonnentag, 2006; van der Ploeg & Kleber, 2003). However, there is a need for comparisons between the acute and chronic effects of unpaid work such as ECD, including how ECD may differently affect worker well-being at and outside of work.

Our study goal was to understand the influences of ECD over time, whether chronic or acute, in light of manufacturing workers' competing life role demands on person-centric and work-centric outcomes. Work-centric measures have particular implications for the work setting, whereas person-centric measures have broader implications for individual well-being. Using longitudinal data with two time points from workers at six manufacturing companies, we compared three outcome variables related to *person-centric* well-being (mental health, depressive symptoms, sleep quality) and three outcome variables related to *work-centric* well-being (family–work conflict, work stress, work performance) for workers who reported whether or not they had ECD at the two time points of this study. Given the effects of acute stressors (acquired ECD), which prompt strong responses but are temporary and may be adapted to with coping mechanisms, and chronic stressors (persistent ECD), which are milder but can cause wear and tear due to the constant erosion of resources and lack of relief from the stressor, we propose the following hypotheses:

Hypothesis 1: Workers with acquired and persistent ECD will report poorer person-centric outcomes (mental health, depressive symptoms, sleep quality) than employees with relinquished ECD or no ECD.

Hypothesis 2: Workers with acquired and persistent ECD will report poorer work-centric outcomes (family–work conflict, work stress, job performance) than employees with relinquished ECD or no ECD.

Method

Study Setting and Participants

Participants in this study were part of a larger longitudinal study of six medium-sized (175-525 employees) U.S. light manufacturing companies in the state of Connecticut (Cherniack, Dussetschleger, Farr, Dugan, & CPH-NEW Team, 2015). We used two waves of data from the parent study which focused on musculoskeletal health and both work and off-the-job conditions associated with the aging

Table 1. Sample Characteristics ($N = 520$).

	% or *M* (*SD*)	Number of scale items	Minimum	Maximum
Age group (years)				
<45	27.5	—	—	—
45 to 54	34.7	—	—	—
>55	37.8	—	—	—
Sex (% male)	70.2	—	—	—
Annual family income (US$)				
<75,000	33.0	—	—	—
75,000-99,999	25.3	—	—	—
>100,000 and above	41.7	—	—	—
Schedule control	2.5 (.73)	1	1	4
Company site				
Site A	30.2	—	—	—
Site B	25.4	—	—	—
Site C	11.5	—	—	—
Site D	11.3	—	—	—
Site E	11.0	—	—	—
Site F	10.6	—	—	—
Child care demands (% yes)	35.6	—	—	—
Psychological job demands	2.6 (.48)	4	1	4
Physical job demands	1.8 (.67)	4	1	4
No eldercare demands (% yes)	76.2	—	—	—
Relinquished eldercare demands (% yes)	9.4	—	—	—
Acquired eldercare demands (% yes)	5.6	—	—	—
Persistent eldercare demands (% yes)	8.8	—	—	—
Mental health	51.7 (9.4)	12	20	70
Depressive symptoms	4.8 (4.16)	8	0	24
Sleep quality	3.1 (.81)	1	1	4
Family–work conflict	1.6 (.50)	2	1	4
Work stress	1.5 (.98)	7	0	3
Job performance	3.9 (.71)	3	1	5

Note. Percentages, means, and standard deviations listed were calculated by excluding missing cases.

process for workers with physically demanding work. Consenting workers completed self-administered paper surveys during work hours at two time points 12 to 18 months apart (T1, T2) between 2011 and 2013. They received a small financial incentive for survey completion. Workers of all job classifications participated (i.e., production, sales, managers, administrative staff) as there were no exclusion criteria for study participation. Site response rates ranged from 29% to 52%. The 520 workers who completed both T1 and T2 surveys are this study's participants.

Table 1 summarizes sample characteristics. Respondents completing surveys at both time points ($N = 520$) were 70% male, 84% White, and 73% married/partnered. Thirty-six percent had childcare demands. Mean age was 50.3 years ($SD = 10.6$), which is expected given that the manufacturing workforce is aging faster than other sectors (Sweet, Pitt-Catsouphes, Besen, Hovhannisyan, & Pasha, 2010). Respondents had moderate schedule control and psychological job demands and fairly low physical job demands. ECD groups varied in size. Of those with complete ECD data at both time points, 76% reported no ECD at either T1 or T2, 9% reported ECD at T1 only (relinquished ECD), 6% reported ECD at T2 only (acquired ECD), and 9% reported ECD at both T1 and T2 (persistent ECD). On average, respondents reported good mental health, few depressive symptoms, moderately high sleep quality, low family–work conflict, low work stress, and fairly high work performance.

Measures

Variables for this study were constructed from survey responses that included measures of work conditions, work attitudes, and personal health and well-being. Coefficient alphas for all measures showed acceptable internal consistency, ranging from .67 to .93 (Table 2).

Sociodemographic variables included age group (<45, 45-54, ≥55 years), sex (female, male), family income group (<US$75,000, US$75,000-US$99,999, ≥US$100,000), company site (Sites A-F), and schedule control (level of agreement using 4-point Likert-type scale with item "I have control over my work schedule," adapted from Büssing

Table 2. Means, Standard Deviations, Alphas, and Intercorrelations for Major Study Variables.

Variable	*M*	*SD*	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1. Actual age in years (T2)	50.3	10.6	—														
2. Sex (1 = male)	0.7	0.5	−.06	—													
3. Family income (T2)	2.1	0.9	.04	.11*	—												
4. Schedule control (T2)	2.5	0.7	.12**	−.09	.24***	—											
5. Child care demands (T2)	0.4	0.5	−.35***	.17***	.06	−.07	—										
6. Psychological job demands (T2)	2.6	0.5	−.14**	.02	.06	−.10*	.14**	(.71)									
7. Physical job demands (T2)	1.8	0.7	−.02	.15**	−.42***	−.32***	.04	.07	(.90)								
8. Eldercare demands (T1)	0.2	0.4	.17***	.02	−.01	.00	−.05	.07	−.03	—							
9. Eldercare demands (T2)	0.1	0.4	.13**	−.05	−.01	.02	−.04	.04	−.02	.46***	—						
10. Mental health (T2)	51.7	9.4	.08	.14**	.08	.03	−.05	−.17***	−.04	−.13**	−.11*	(.67)					
11. Depressive symptoms (T2)	4.8	4.16	.00	−.05	−.15**	−.13**	.05	.13**	.16***	.10*	.14**	−.72***	(.80)				
12. Sleep quality (T2)	3.1	0.81	−.04	.01	.12**	.17***	.00	−.06	−.12**	−.08	−.07	.32***	−.50***	—			
13. Family–work conflict (T2)	1.6	0.50	−.10*	.00	−.02	−.05	.10*	.10*	.10*	.14**	.18***	−.30***	.32***	−.22***	(.67)		
14. Work stress (T2)	1.5	0.98	.02	.03	.06	−.15**	.07	.52***	.09*	.20***	.09*	−.27***	.22***	−.07	.22***	(.87)	
15. Job performance (T2)	3.9	0.71	−.06	−.06	.13**	.19***	.01	−.03	−.12**	−.03	−.02	.19***	−.26***	.17***	−.20***	−.10*	(.93)

Note. Alpha values are reported along the diagonal. T1 = Time 1 data; T2 = Time 2 data.
*$p < .05$. **$p < .01$ (two-tailed test).

(1996)). Age categories were examined to inform the development of interventions tailored to the needs of specific worker age groups at company sites; the age 45 cut point is based on the U.S. Census Bureau's definition of a person entering midlife and the age 55 cut point is common for defining an older worker (Hwalek, Straub, & Kosniewski, 2008). We included company to account for potential site-specific differences. Schedule control is a proxy for a worker's organizational social status.

Competing demands were included in our analyses so that we could examine the effect of different forms of ECD on person- and work-centric outcomes above and beyond other work and home demands that drain personal resources. *Childcare demands* were defined as respondents reporting that they personally had primary or shared responsibility for children below 18 years of age in their household. We assessed *psychological and physical job demands* with Job Content Questionnaire subscales (Karasek, Pieper, & Schwartz, 1985). Each subscale asks respondents whether four items describe their jobs, using a 4-point scale from 1 (*strongly disagree*) to 4 (*strongly agree*). A sample psychological job demands item is "My job requires working very fast." A sample physical job demands item is "I am often required to move or lift very heavy loads on my job."

ECD were measured with a question administered at two time points. At each time point, ECD was defined as reporting that one or more adults aged 65 years and older depended on respondents for help due to disability or chronic illness. For the purposes of longitudinal analysis, workers were categorized based on whether they reported ECD at both time points (persistent ECD), T1 only (relinquished ECD), T2 only (acquired ECD), or at neither time point (no ECD).

Person-centric outcomes were assessed at two time points, using three measures. Mental health was assessed using the Short-Form Health Survey's (SF-12) mental health summary scale and computed per its guidelines (Ware, Kosinski, & Keller, 1998). A sample item is "During the past 4 weeks, how much of the time have your physical health or emotional problems interfered with your social activities?" to which participants responded with a 5-point scale from 0 (*none of the time*) to 4 (*all of the time*).

Depressive symptoms were assessed using an eight-item version of the Center for Epidemiologic Studies Depression (CES-D) scale that asks respondents to rate on a 4-point scale from 0 (*rarely or none of the time*) to 3 (*all of the time)* how often they experienced symptoms of depression over the past week. Sample items include "I felt sad," and "I felt that everything I did was an effort." The CES-D has excellent internal consistency and test–retest reliability in surveys of the adult population (Radloff, 1977; $\alpha = .80$). A score was calculated by summing ratings across items.

Sleep quality was assessed using one item from the Pittsburgh Sleep Quality Index (Buysse, Reynolds, Monk, Berman, & Kupfer, 1989) that asks participants to rate the quality of their sleep on a typical night using a 4-point scale from 1 (*poor*) to 4 (*good*).

Work-centric outcomes were assessed at two time points, using three measures. Family–work conflict was measured with two items from the National Comorbidity Study (Kessler, 2008). Participants rated two questions, "How often do things going on at home make you feel tense and irritable on the job" and "How often do the demands of your family interfere with your work on the job?" on a 4-point scale from 1 (*never*) to 4 (*always*). A score was calculated by averaging ratings on items.

Work stress was measured with seven items from the Stress in General (SIG) scale, a stress measure that instructs respondents to rate words or phrases as descriptors of their work; sample items were "demanding" and "hectic" (Stanton, Balzer, Smith, Parra, & Ironson, 2001; $\alpha = .91$). Each item was rated with 0 (*no*), 1.5 (*cannot decide*), or 3 (*yes*), and a score was calculated by averaging ratings across items.

Performance was measured with three items from the study of Farh, Dobbins, and Cheng (1991) that assess quality of work, work efficiency, and overall work performance. To approximate supervisor ratings of work performance, we used the perspective-taking approach recommended by Schoorman and Mayer (2008) to measure performance when independent supervisor ratings are not available. For each item, respondents reported how they perceive their performance is viewed by their supervisor, using a 5-point scale from 1 (*poor*) to 5 (*excellent*). A mean score was calculated by averaging ratings across items ($\alpha = .75$).

Data Analyses

We used analysis of variance (ANOVA) to evaluate mean scores differences for the four ECD categories. All analyses were conducted using hierarchical multiple regression. The six outcome variables (mental health, depressive symptoms, sleep quality, family–work conflict, work stress, and work performance) used as dependent variables in six separate hierarchical regression models were measured at T2. In each case, the predictor variable was ECD, coded in four categories: persistent, acquired, relinquished, and none (reference group). For each equation, sociodemographic variables were entered in the first step (age group, gender, income level, schedule control), competing demands were entered in the second step (child care demands, psychological job demands, physical job demands), the outcome variable measured at T1 was entered in the third step, and the set of dummy-coded ECD categories was entered in the fourth step. We entered blocks of variables sequentially to enable us to evaluate the unique variance explained by ECD after accounting for other important variables, such as competing job and family demands. Listwise deletion was used for all regression analyses.

Table 3. Outcomes by Eldercare Demands.

	None	Relinquished	Acquired	Persistent	Totals
	M (*SD*)	*M* (*SD*)	*M* (*SD*)	*M* (*SD*)	*M* (*SD*)
Mental health	52.56 (8.63)	48.87 (11.52)	48.66 (11.24)	49.68 (11.42)	51.75 (9.44)
Depressive symptoms***	4.35 (3.98)	6.11 (4.69)	7.61 (4.36)	5.22 (4.02)	4.77 (4.16)
Sleep quality**	3.17 (0.80)	2.85 (0.87)	2.76 (0.87)	3.11 (0.68)	3.11 (0.81)
Family–work conflict***	1.51 (0.49)	1.58 (0.53)	1.67 (0.43)	1.83 (0.49)	1.55 (0.50)
Work stress***	1.45 (0.97)	1.93 (0.90)	1.42 (1.05)	1.95 (0.88)	1.54 (0.98)
Job performance	3.88 (0.71)	3.92 (0.70)	3.98 (0.80)	3.75 (0.74)	3.88 (0.71)

Note. ANOVA = analysis of variance.
[a]Sample sizes vary due to missing data; row percentages compared.
*$p < .05$. **$p < .01$. ***$p < .001$ per ANOVA analysis.

Results

ANOVAs

A one-way between-subjects ANOVA was conducted to compare outcome variables among the four categories of ECD: persistent, acquired, relinquished, and none (Table 3). There was a statistically significant difference in depressive symptoms between ECD groups as determined by one-way ANOVA, $F(3, 504) = 7.75$, $p = .000$. A Tukey post hoc test revealed depressive symptoms were statistically significantly higher for the acquired ECD group (7.61 ± 4.36, $p = .000$) and the relinquished ECD group (6.11 ± 4.69, $p = .029$) compared with no ECD group (4.35 ± 3.98). There was a statistically significant difference in sleep quality between ECD groups as determined by one-way ANOVA, $F(3, 507) = 4.17$, $p = .006$. A Tukey post hoc test showed sleep quality was statistically significantly lower for the acquired ECD group ($2.76 \pm .87$, $p = .041$) compared with no ECD group ($3.17 \pm .80$). There were no significant differences in mental health between ECD groups based on one-way ANOVA (not controlling for sociodemographic covariates or competing demands).

There was a statistically significant difference in family–work conflict between ECD groups as determined by one-way ANOVA, $F(3, 508) = 1.57$, $p = .000$. A Tukey post hoc test revealed family–work conflict was statistically significantly higher for the persistent ECD group ($1.83 \pm .49$, $p = .000$) compared with no ECD group ($1.51 \pm .49$). There was a statistically significant difference in work stress between ECD groups as determined by one-way ANOVA, $F(3, 511) = 6.84$, $p = .000$. A Tukey post hoc test showed that work stress was statistically significantly higher for the relinquished ECD group ($1.93 \pm .90$, $p = .006$) and the persistent ECD group ($1.95 \pm .88$, $p = .005$) compared with no ECD group ($1.45 \pm .97$). There were no significant differences in job performance between ECD groups based on one-way ANOVA.

Regression Analyses

Tables 4 and 5 summarize the testing of hierarchical regression models in which person-centric and work-centric outcomes were dependent variables and the predictor was the ECD category (none, acquired, persistent, and relinquished). After controlling for covariates (sociodemographic variables, competing demands), respondents with acquired ECD reported statistically significantly worse mental health ($p < .05$) and greater depressive symptoms ($p < .001$) than those with no ECD, and those with persistent ECD reported statistically significantly greater family–work conflict ($p < .01$) and greater work stress ($p < .05$) than those with no ECD. We did not observe a significant impact of relinquishing ECD on any of the person-centric or work-centric well-being outcomes included in this study, and no significant differences were observed among ECD categories for the variables of sleep quality or work performance.

Pertaining to sociodemographics, in comparison with the lowest family income group (less than US$75,000), respondents with higher family income levels had significantly fewer depressive symptoms ($p < .05$) and workers of the middle family income group had greater family–work conflict ($p < .05$). Compared with the youngest age group (<45 years), respondents in the highest age group (55+ years) had significantly higher work stress ($p < .05$) and respondents in the two highest age groups (45-55 years, 55+ years) had lower self-reported job performance ($p < .05$). Respondents with greater schedule control had significantly lower work stress ($p < .001$), as well as higher sleep quality ($p < .01$) and work performance ($p < .05$).

Regarding competing demands, all models where acquired and persistent ECD had significant relationships with outcomes, the competing demands block of variables (entered at the second step of the regression models) showed a significant R^2 change. Respondents with greater psychological job demands had significantly poorer mental health ($p < .01$) and greater work stress ($p < .001$). Respondents with greater physical job demands had significantly greater family–work conflict ($p < .05$).

Discussion

The goal of this study was to ascertain the relationship of acquired and persistent ECD, as acute and chronic stresses, with various person-centric and work-centric outcomes

Table 4. Hierarchical Regression Analyses Evaluating Types of ECD as Predictors of Person-Centric Outcomes.

	Mental health		Depressive symptoms		Sleep quality	
Predictor	β	ΔR^2	β	ΔR^2	β	ΔR^2
Step 1						
Sociodemographic variables		.04		.05*		.06**
Aged 45-54 years (T2)	−.01		.02		−.04	
Aged 55 years and above (T2)	.03		.03		−.05	
Reference: 44 years or younger						
Male sex (T2)	.07		−.02		.03	
Reference: Female sex						
Middle family income (US$75,000-US$99,999) (T2)	.06		−.10*		.03	
Higher family income (US$100,000 and above) (T2)	.09		−.12*		.05	
Reference: Lower family income (less than US$75,000)						
Site B	.03		−.04		.01	
Site C	−.04		.00		.05	
Site D	.01		−.06		.02	
Site E	.00		−.04		−.05	
Site F	.02		−.08		.04	
Reference: Site A						
Schedule control (T2)	−.02		−.07		.11**	
Step 2						
Competing demands		.03**		.02*		.01
Childcare demands (T2)	−.03		.02		−.03	
Psychological job demands (T2)	−.12**		.07		−.02	
Physical job demands (T2)	.03		−.05		.01	
Step 3						
Dependent variable measured at Time 1 (T1)		.24***		.30***		.30***
	.49***		.56***		.55***	
Step 4						
Type of ECD		.01		.03**		.01
Relinquished ECD	−.03		.06		−.07	
Acquired ECD	−.10*		.15***		−.07	
Persistent ECD	−.06		.01		.01	
Reference: Has no eldercare responsibilities						

Note. n = 476-481. Sample sizes vary due to missing data. A significant R^2 change at this step in the regression equation indicates significant for this block of variables. ECD = eldercare demands.
*$p < .05$. **$p < .01$. ***$p < .001$ (two-tailed test).

among manufacturing workers. Guided by COR theory (Hobfoll, 1989), we specifically looked at the independent effects of ECD after taking into account the variance explained by sociodemographic factors and competing life demands. Our findings suggest that for individuals juggling work and eldercare responsibilities, patterns of ECD and their effects vary according to the temporal history of the ECD.

Answering our research hypotheses, we found that acquired and persistent ECD had poorer outcomes than relinquished ECD or no ECD. We additionally found that proximal caregiving demands (acquired) appear to have a different impact than long-ranging caregiving demands (persistent) on both person-centric and work-centric outcomes, even after controlling for a number of important and relevant covariates. Acquired ECD, which we associate with acute stress, adversely affects workers' personal mental health, whereas persistent ECD, which we associate with chronic stress, adversely affects well-being within the work domain. Once other factors are considered, it is noteworthy that relinquishing ECD appears to have the same effects on outcomes as having no ECD at either study time point. This finding lends further support that ECD drain resources and that recovery from ECD is needed (see Dugan & Barnes-Farrell, 2017), because when ECD are removed from workers, the effect is similar as them having had no such demands. The finding also identifies the potential importance of workers with ECD having access to preventive and restorative interventions over a finite period of time (e.g., respite services; Bookman & Kimbrel, 2011).

There were other notable study findings, particularly regarding competing demands. In all models where acquired and persistent ECD had significant relationships with outcomes, the competing demands block of variables (entered at the second step of regression models) showed a significant R^2 change. Thus, ECD and competing demands simultaneously drained resources and had an adverse effect on outcomes, another finding that supports our use of COR theory. In particular, we found that ECD combined with psychologically demanding work is especially detrimental

Table 5. Hierarchical Regression Analyses Evaluating Types of ECD as Predictors of Work-Centric Outcomes.

	Family–work conflict		Work stress		Work performance	
Predictor	β	ΔR^2	β	ΔR^2	β	ΔR^2
Step 1						
Sociodemographic variables		.04*		.05**		.10***
Aged 45-54 years (T2)	−.05		.04		−.12*	
Aged 55 years and above (T2)	−.11		.10*		−.11*	
Reference: 44 years or younger						
Male sex (T2)	.00		.02		−.03	
Reference: Female sex						
Middle family income (US$75,000-US$99,999) (T2)	.10*		.03		.00	
Higher family income (US$100,000 and above) (T2)	−.02		.02		.07	
Reference: Lower family income (less than US$75,000)						
Site B	.01		.01		.03	
Site C	.04		.02		−.06	
Site D	−.06		.01		.05	
Site E	.01		.00		.09	
Site F	−.04		.02		.00	
Reference: Site A						
Schedule control (T2)	−.01		−.12***		.09*	
Step 2						
Competing demands		.03**		.26***		.00
Childcare demands (T2)	.01		.05		.01	
Psychological job demands (T2)	.07		.32***		−.03	
Physical job demands (T2)	.10*		.04		−.06	
Step 3						
Dependent variable measured at Time 1 (T1)		.18***		.20***		.18***
	.42***		.48***		.45***	
Step 4						
Type of ECD		.01		.01*		.01
Relinquished ECD	−.01		.05		.05	
Acquired ECD	.05		.00		.06	
Persistent ECD	.10*		.09**		−.06	
Reference: Has no eldercare responsibilities						

Note. n = 483-489. Sample sizes vary due to missing data. A significant R^2 change at this step in the regression equation indicates significant for this block of variables. ECD = eldercare demands.
*$p < .05$. **$p < .01$. ***$p < .001$ (two-tailed test).

to mental health and stress, possibly due to depleted psychological resources. ECD combined with physically demanding work was associated with family–work conflict, which may be due to drained physical resources, but possibly to having a production line job that is not easily interrupted when family needs arise. Taken together, findings related to completing demands suggest that supporting workers in all their life roles may be beneficial, with special attention paid to developing interventions for those with heavier psychological and physical job demands.

Findings regarding sociodemographic variables showed that workers of higher income levels had fewer depressive symptoms and greater family–work conflict than those in the lowest income group. Workers with higher schedule control had less work stress, better sleep quality, and higher self-rated work performance, possibly due to their greater workplace social status and/or having the decision latitude to more optimally allocate time resources to fulfilling their role demands or to participating in leisure and recovery activities. Older workers had more work stress and worse self-rated work performance (i.e., perception of how their supervisor would evaluate their performance) compared with the youngest workers (<45 years). As interpreted through COR theory, the poorer outcomes experienced by older workers suggest they may have fewer resource reserves to draw from in carrying out life demands, or it could be understood in light of the identity degradation and internalized stigma that older workers sometimes experience resulting from workplace age discrimination (Berger, 2006). To better assist workers with ECD, employers could offer targeted interventions to workers who are older or have lower incomes and increase opportunities for greater schedule control.

Future Research

A next step in understanding acute and persistent ECD is refining the nature of ECD and their over time characteristics.

Our theoretical perspective in this study, COR theory, would suggest that acquired ECD are likely to disrupt the allocation and prioritization of resources that would otherwise be used to maintain health and well-being amid competing demands, and that persistent ECD are likely to continuously erode such resources. However, to further understand the impact of acquired and persistent ECD, we need to consider the nature, extent, and trajectory of such caregiving demands, which vary considerably (National Academies of Sciences, Engineering, and Medicine, 2016). For example, some ECD may require substantial time and attention resources initially (e.g., stepping in to take over an elder's financial decisions) but become routinized and less demanding over time. Other ECD may consume greater personal energy over time and require training due to the health care needs of the person they care for (Berg, Fortinsky, & Robison, 2019). Other ECD activities such as personal hands-on care may fluctuate, increasing or decreasing over time, depending on whether the dependent elder continues to live independently, moves to home care, or to a full-time professional care environment. These examples illustrate how the dynamic features of ECD have implications for the amount and kinds of resources (e.g., emotional, cognitive, physical energies) workers must draw upon as they continue to cope with the changing ECD landscape over time.

Another next step in this line of research is to examine explanatory mechanisms. COR theory suggests that the link between the acute stress of acquired ECD and associated poorer mental health outcomes may be explained through drained resources or to a lack of needed coping resources, but factors distinct from resources may be consequential. For example, when ECD are acquired, psychological well-being may be diminished by grief over the impending loss of a deeply loved parent. Similarly, COR theory suggests the link between the chronic stress of persistent ECD and poorer work outcomes results from resource depletion and insufficient recovery, but it could be explained by increasingly porous work–family boundaries as a worker lives with ECD over time. We might further examine what factors buffer acute and chronic ECD (e.g., employer support, positive perceptions of ECD; Zacher, Jimmieson, & Winter, 2012; Zacher & Winter, 2011).

Implications

Our theory-driven findings provide direction to employers and could pave the way toward novel intervention approaches that target the particular effects of acquired and persistent ECD for adults with demanding work. Research-informed interventions could be developed to provide resources needed by workers or teach the types of coping most beneficial to workers with eldercare role responsibilities that are newly acquired or persist for an extended time. Furthermore, multimodal intervention approaches may be useful, as suggested by our results that point to the influence of both age and income on worker outcomes.

Employers may improve the mental health and quality of work life of workers with different types of ECD through organizational interventions including flexible schedules, supervisor support, mental health services, or dedicated elder caregiver support programs (i.e., referrals, information, skill building, counseling, support groups, and respite care; Neal & Wagner, 2002). Such interventions may slow the drain of time and energy resources, build up other needed resources, and provide opportunities for recovery.

Small- and medium-sized businesses such as the manufacturing companies in this study can especially benefit from effective and affordable approaches to addressing the needs of their workers with ECD, particularly as their workforces age and ECD prevalence grows. The results of this study will be shared with workers and managers at participating manufacturing companies as continuation of the work started by the study reported here. The goal in discussing study results with participating companies and their workers will be to apply the findings of this research. Specifically, we hope to design targeted workplace programs for employees experiencing ECD in various forms and to determine how person-centric and work-centric outcomes can be improved depending upon whether eldercare is a relatively new demand or a demand that has continued over time.

Strengths and Limitations

We acknowledge this study has limitations. Although the prevalence of eldercare is similar to other studies (MetLife Mature Market Institute, 2010), dividing our sample into four distinct groups may have prevented us from fully evaluating their impact. Of the four groups examined, those with acquired ECD made up the smallest group of participants (29 of 520), which may have affected our ability to detect associations with outcomes. Our measure of ECD also does not distinguish the degree of eldercare demand such as type of care provided (hands-on or administrative), number of hours spent caregiving, whether the elder resides with the worker, or the elder's functional status, which prevents us from having a better understanding of the specific aspects of ECD that affect workers and might be targeted for intervention (Burch et al., 2018). Finally, use of a resources-based perspective to frame this article and focusing on eldercare as a demand may overshadow evidence that shows caregiving for older adults also has beneficial effects; examining eldercare as a role-enriching activity that can build resources is an area of research that should be expanded (Tement & Korunka, 2015).

Conclusion

Viewing ECD over time as acute and chronic stressors affecting workers represents a novel way to understand how and why juggling work and eldercare can adversely affect employed caregivers, expanding the widely cited stress process model of caregiving (Pearlin, Mullan, Semple, & Skaff,

1990). Our findings, based on COR theory, support the important distinction between acute and chronic stressors found in other literature (Geurts & Sonnentag, 2006) and which in this article is represented by ECD. The outcomes most closely associated with acquired and persistent ECD appear to be systematically different from one another. Likewise, the kinds of interventions and supports that may be most helpful to those who have recently acquired ECD are likely to be somewhat different from the kinds of supports that can be of most value to individuals who are managing persistent ECD.

Declaration of Conflicting Interests

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Ethical Approval

This study was approved by UConn Health IRB Approval 18-072S-2.

Funding

The author(s) disclosed receipt of the following financial support for the research, authorship, and/or publication of this article: This work was supported by the National Institute for Occupational Safety and Health [Grant Number 1 R01 OH OH008929 to M.G.C.]. Its contents are solely the responsibility of the authors and do not necessarily represent the official views of NIOSH.

ORCID iD

Alicia G. Dugan https://orcid.org/0000-0001-5776-2960

References

Bakker, A. B., & Demerouti, E. (2007). The job demands-resources model: State of the art. *Journal of Managerial Psychology*, *22*, 309-328.

Berg, K. M., Fortinsky, R. H., & Robison, J. (2019). Family caregivers needed—No training provided. *JAMA Internal Medicine*, *179*, 835-836.

Berger, E. D. (2006). "Aging" identities: Degradation and negotiation in the search for employment. *Journal of Aging Studies*, *20*, 303-316.

Bookman, A., & Kimbrel, D. (2011). Families and elder care in the twenty-first century. *Future of Children*, *21*, 117-140.

Burch, K. A., Dugan, A. G., & Barnes-Farrell, J. L. (2018). Understanding what eldercare means for employees and organizations: A review and recommendations for future research. *Work, Aging and Retirement*, *5*(1), 44-72.

Büssing, A. (1996). Social tolerance of working time schedules: A comparison between nurses of West and East German general hospitals. *Work & Stress*, *10*, 238-250.

Buysse, D. J., Reynolds, C. F., III, Monk, T. H., Berman, S. R., & Kupfer, D. J. (1989). The Pittsburgh Sleep Quality Index: A new instrument for psychiatric practice and research. *Psychiatry Research*, *28*, 193-213.

Calvano, L. (2013). Tug of war: Caring for our elders while remaining productive at work. *Academy of Management Perspectives*, *27*, 204-218.

Cherniack, M., Dussetschleger, J., Farr, D., Dugan, A., & CPH-NEW Team. (2015). Workplace cohort studies in times of economic instability. *American Journal of Industrial Medicine*, *58*(2), 138-151.

Dugan, A. G., & Barnes-Farrell, J. L. (2017). Time for self-care: Downtime recovery as a buffer of work and home/family time pressures. *Journal of Occupational and Environmental Medicine*, *59*(4), e46-e56.

Dugan, A. G., & Barnes-Farrell, J. L. (2018). Working mothers' second shift, personal resources, and self-care. *Community, Work & Family*, 1-18.

Dugan, A. G., Fortinsky, R. H., Barnes-Farrell, J. L., Kenny, A. M., Robison, J. T., Warren, N., & Cherniack, M. G. (2016). Associations of eldercare and competing demands with health and work outcomes among manufacturing workers. *Community, Work & Family*, *19*(5), 569-587.

Duxbury, L., Higgins, C., & Smart, R. (2011). Elder care and the impact of caregiver strain on the health of employed caregivers. *Work: A Journal of Prevention, Assessment and Rehabilitation*, *40*, 29-40.

Farh, J. L., Dobbins, G. H., & Cheng, B. S. (1991). Cultural relativity in action: A comparison of self-ratings made by Chinese and US workers. *Personnel Psychology*, *44*, 129-147.

Geurts, S. A., & Sonnentag, S. (2006). Recovery as an explanatory mechanism in the relation between acute stress reactions and chronic health impairment. *Scandinavian Journal of Work, Environment & Health*, *32*, 482-492.

Goode, W. J. (1960). A theory of role strain. *American Sociological Review*, *25*, 483-496.

Gordon, J. R., Pruchno, R. A., Wilson-Genderson, M., Murphy, W. M., & Rose, M. (2012). Balancing caregiving and work: Role conflict and role strain dynamics. *Journal of Family Issues*, *33*, 662-689.

Grandey, A. A., & Cropanzano, R. (1999). The conservation of resources model applied to work–family conflict and strain. *Journal of Vocational Behavior*, *54*, 350-370.

Greenhaus, J. H., & Beutell, N. J. (1985). Sources of conflict between work and family roles. *Academy of Management Review*, *10*, 76-88.

Hobfoll, S. E. (1989). Conservation of resources: A new attempt at conceptualizing stress. *American Psychologist*, *44*, 513-524.

Hwalek, M., Straub, V., & Kosniewski, K. (2008). Older workers: An opportunity to expand the long-term care/direct care labor force. *The Gerontologist*, *48*(Suppl. 1), 90-103.

Karasek, R. A., Pieper, C. F., & Schwartz, J. E. (1985). *Job Content Questionnaire and user's guide* (Revision 1.1, Developed at Columbia University, Information from Dr. Karasek). Lowell: Department of Work Environment, University of Massachusetts.

Kessler, R. C. (2008). *National Comorbidity Survey: Baseline (NCS-1), 1990-1992* (ICPSR06693-v6). Ann Arbor, MI: Inter-university Consortium for Political and Social Research.

Kirchmeyer, C. (1992). Nonwork participation and work attitudes: A test of scarcity vs. expansion models of personal resources. *Human Relations*, *45*, 775-795.

Kramer, B. J. (1997). Gain in the caregiving experience: Where are we? What next? *The Gerontologist*, *37*, 218-232.

Lovallo, W. R. (2015). *Stress and health: Biological and psychological interactions*. Thousand Oaks, CA: SAGE.

Marks, N. F., Lambert, J. D., & Choi, H. (2002). Transitions to caregiving, gender, and psychological well-being: A prospective

U.S. national study. *Journal of Marriage and Family*, *64*, 657-667.

Marks, S. R. (1977). Multiple roles and role strain: Some notes on human energy, time and commitment. *American Sociological Review*, *42*, 921-936.

Meijman, T. F., & Mulder, G. (1998). Psychological aspects of workload. In P. J. D. Drenth & H. Thierry (Eds.), *Handbook of work and organizational psychology: Work psychology* (Vol. 2, pp. 5-33). Hove, UK: Psychology Press.

MetLife Mature Market Institute. (2010). *The MetLife study of working caregivers and employer health care costs*. New York, NY: Metropolitan Life Insurance Company. Available from www.maturemarketinstitute.com

National Academies of Sciences, Engineering, and Medicine. (2016). *Families caring for an aging America*. Washington, DC: The National Academies Press.

National Alliance for Caregiving, and AARP Public Policy Institute. (2015). *Caregiving in the U.S.* (Research report published online by AARP). Retrieved from https://www.aarp.org/content/dam/aarp/ppi/2015/caregiving-in-the-united-states-2015-report-revised.pdf

Neal, M. B., & Wagner, D. L. (2002). *Working caregivers: Issues, challenges and opportunities for the aging network* (Program Development Issue Brief commissioned by the Administration on Aging, U.S. Department of Health and Human Services). Retrieved from http://archives.pdx.edu/ds/psu/15447

Pearlin, L. I., Mullan, J. T., Semple, S. J., & Skaff, M. M. (1990). Caregiving and the stress process: An overview of concepts and their measures. *The Gerontologist*, *30*, 583-594.

Pinquart, M., & Sörensen, S. (2003). Differences between caregivers and non-caregivers in psychological health and physical health: A meta-analysis. *Psychology and Aging*, *18*, 250-267.

Radloff, L. S. (1977). The CES-D Scale: A self-report depression scale for research in the general population. *Applied Psychological Measurement*, *1*, 385-401.

Schoorman, F. D., & Mayer, R. C. (2008). The value of common perspectives in self-reported appraisals: You get what you ask for. *Organizational Research Methods*, *11*, 148-159.

Solberg, L. M., Solberg, L. B., & Peterson, E. N. (2014). Measuring impact of stress in sandwich generation caring for demented parents. *GeroPsych: The Journal of Gerontopsychology and Geriatric Psychiatry*, *27*, 171-179.

Stanton, J. M., Balzer, W. K., Smith, P. C., Parra, L. F., & Ironson, G. (2001). A general measure of work stress: The Stress in General (SIG) scale. *Educational and Psychological Measurement*, *61*, 866-888.

Sweet, S., Pitt-Catsouphes, M., Besen, E., Hovhannisyan, S., & Pasha, F. (2010). *Talent pressures and the aging workforce: Responsive action steps for the health care and social assistance sector*. Boston, MA: Sloan Center on Aging & Work, Boston College.

Tement, S., & Korunka, C. (2015). The moderating impact of types of caregiving on job demands, resources, and their relation to work-to-family conflict and enrichment. *Journal of Family Issues*, *36*, 31-55.

van der Ploeg, E., & Kleber, R. J. (2003). Acute and chronic job stressors among ambulance personnel: Predictors of health symptoms. *Occupational and Environmental Medicine*, *60*(Suppl. 1), i40-i46.

Ware, J. E., Kosinski, M., & Keller, S. D. (1998). *SF-12: How to score the SF-12 physical and mental health summary scales*. Lincoln, RI: QualityMetric.

Zacher, H., Jimmieson, N. L., & Winter, G. (2012). Eldercare demands, mental health, and work performance: The moderating role of satisfaction with eldercare tasks. *Journal of Occupational Health Psychology*, *17*, 52-64.

Zacher, H., & Winter, G. (2011). Eldercare demands, strain, and work engagement: The moderating role of perceived organizational support. *Journal of Vocational Behavior*, *79*, 667-680.