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Linking commuting stress to job satisfaction and turnover intention: The mediating role of burnout

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ABSTRACT

This study uses structural equation modelling to test a model that posits that commuting stress would have direct and indirect effects (through burnout) on employee job satisfaction and turnover intention. Based on a sample ($N=336$) of employees from diverse occupations in Ghana, the results partly supported the authors' hypothesized model. Commuting stress was positively related to burnout and turnover intention but had no direct relationship with job satisfaction. In addition, commuting stress was indirectly related to job satisfaction and turnover intention via burnout. These results were found to be invariant for men and women. Implications of the findings for theory and practice are discussed.

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Burnout; commuting stress; job satisfaction; turnover intention

Introduction

Commuting to and from work represents an ever-increasing component of time use for most workers. In the United States, for example, Roberts, Hodgson, and Dolan (2011) reported that average daily commute times increased by 16% between 1997 and 2006. This trend is not unique to the United States: in the United Kingdom commuting times increased by 13% over the same period. Olsson, Garling, Ettema, Friman, and Fujii (2013) suggest that average commute times reported in the literature on international transportation studies range between 40 and 80 minutes, with public transit taking longer than car commutes. Thus, workers spend average of 4% to 10% of their wake time on workdays on commuting. Indeed, commuting is recognized as a source of stress in the working and private life of employees (Novaco & Gonzales, 2009; Novaco, Stokols, & Milanese, 1990). In a study using a daily reconstruction method to measure enjoyment of individuals within their daily activities, Kahneman, Krueger, Schkade, Schwarz, and Stone (2004) found commuting to be one of the activities that were associated with negative feelings.

To the extent that commuting can be stressful, chronic exposure to commuting stress can impair employee health and work performance. Surprisingly, only a handful of studies in the occupational stress literature have

addressed the issue of commuting stress. Extant research on commuting has mostly focused on objective characteristics of commuting such as time spent in commuting, mode of transport, predictability of commute, control, and crowding and how these affect the commuting experience. It has been shown that commuting stress increases with the duration of commute (Evans & Wener, 2006; Gottholmseder, Nowotny, Pruckner, & Theurl, 2009), variations in commuting time (Kluger, 1998), unpredictability of commute (Wener, Evans, Phillips, & Nadler, 2003) and lack of control (Gottholmseder et al., 2009). Although these studies have enhanced our understanding of the antecedents of commuting stress, more research is needed to understand the impact of commuting stress on employees' well-being. The few studies in this regard focused mainly on physical health consequences of commuting (e.g., Hansson, Mattisson, Björk, Östergren, & Jakobsson, 2011). Relatively little empirical research has been directed toward the impact of commuting on work-related attitudes and behaviors. Although a few studies have examined effects of commuting on organizational outcomes such as job satisfaction, turnover, and workplace aggression (e.g., Hennessy, 2008; Novaco et al., 1990), these studies did not examine why commuting stress is related to these outcomes.

Moreover, past research on commuting stress has been done mainly in developed countries. To date, little is known about commuting and its effects in less developed countries such as Ghana. Unlike in the developed world where transport systems and infrastructure may be relatively well developed, commuting constitutes a grave concern in developing countries. As in most developing countries, poor infrastructure, inadequate or nonexistent transport systems, and limited transport options (usually cars and minipassenger buses) constitute significant constraints on commuting in Ghana. For example, it is quite common for some workers to spend several hours in wait of buses to or from work.

In this study, we apply the conservation of resources (COR) theory (Hobfoll, 1989) to account for the influence of commuting stress on job satisfaction and turnover intention through burnout among employees in Ghana. The study contributes to the literature in two significant ways. First, the study extends past research being one of the few studies that examines organizational outcomes of commuting by focusing on individuals' subjective experiences of commuting rather than objective aspects of commuting such as time and distance. Secondly, by examining burnout as a mediator in the commuting stress–outcome relationship, the study contributes to our understanding of underlying psychological mechanisms through which commuting stress influences employee well-being.

Conceptual foundations

A major challenge in research on commuting stress is how to conceptualize the commuting experience. In its early stages of research, *commuting stress*

was operationally defined in terms of the time it takes to travel from home to work and the distance covered during the journey (see Novaco & Gonzales, 2009). Novaco and his colleagues (Novaco et al., 1990; Stokols & Novaco, 1981) introduced the concept of *commute impedance* to “capture the obstructive, frustrating aspects of road traffic that interfere with behavioral objectives, evoke unpleasant emotional states, and detract from efficient performance and personal satisfaction” (Novaco & Gonzales, 2009, p. 180). Defined as behavioral restraint on movement or goal attainment (Novaco et al., 1990), commute impedance was typically operationalized in terms of objective characteristics such as speed, distance, and traffic congestion. Impedance was assumed to be at its highest when long distances are covered at slow speed and lowest when short distances are covered quickly (Novaco et al., 1990). However, attempts to relate these objective indicators of commute impedance to employee attitudes and behaviors have mostly yielded inconsistent results (see Novaco & Gonzales, 2009). These mixed findings seem to support the view that the simple use of objective characteristics of commute does not adequately explain individual and organizational outcomes (Koslowski, 1997).

Drawing on the work stress literature, current research distinguishes between physical dimensions of impedance (objective impedance) from an individual's perception of the commuting experience (subjective impedance). Novaco et al. (1990) operationalized subjective impedance in terms of four components: evening commute congestion, aversiveness of travel, morning commute congestion, and surface street constraints. Although subjective impedance overlaps with physical impedance, the two dimensions of impedance are independent (Novaco & Gonzales, 2009). For example, in a scenario-based study, Eriksson, Friman, and Gärling (2013) showed that though their commuting time was the same, participants differed in their reported mood associated with the commute. Thus, it is possible for commuters with the same degree of physical impedance to report different levels of subjective impedance. Given the importance of cognitive appraisals in the stress process (Lazarus & Folkman, 1984), we conceptualized commuting stress in the present study in terms of the subjective dimension of commute impedance. Moreover, it has been shown that subjective impedance may mediate between objective parameters of commute impedance and stress outcomes (e.g., Novaco et al., 1990), suggesting that subjective impedance underlies the experience of stress associated with commuting.

In the next subsections we develop hypotheses for the direct relationships of commuting stress with job satisfaction and turnover intention and for the mediating role of burnout in these relationships. These relationships are depicted in [Figure 1](#). The proposed relationships are based on Hobfoll's COR theory, which postulates that individuals strive to obtain and maintain resources, which include objects, personal characteristics, conditions, or

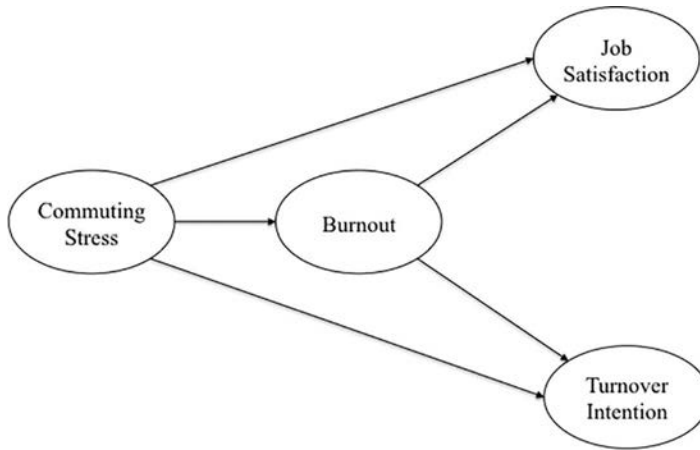


Figure 1. The hypothesized model for the study.

energies that have instrumental or symbolic value to the individual (Hobfoll, 1989). According to the COR, theory stress emanates from a threat to resources, the actual loss of a resource, or the insufficient gain of additional resources following significant investment of resources (Hobfoll, 2002). The COR theory is relevant to this study, as it explains how individuals respond when confronted with stressful situations.

Commuting stress and job satisfaction

Job satisfaction has been defined as individuals' cognitive or affective evaluation of their job (Brief, 1988). In other words, job satisfaction encompasses employees' feelings and thoughts about various aspects of their job. Job satisfaction is typically operationalized from two approaches. The global approach, which is adopted in the present study, focuses on an individual's overall positive (or negative) evaluation of the job or job situation, whereas the facet approach focuses on an individual's evaluation of specific aspects of the job such as promotion, pay, coworkers, and supervisors (Spector, 1997). Although the negative impact of various forms of work stressors on job satisfaction is well documented in the occupational stress literature (e. g., Bacharach, Bamberger, & Conley, 1991; Häusser, Mojzisch, Niesel, & Schulz-Hardt, 2010; Lambert, Hogan, Paoline, & Clearke, 2005), the potential effect of commuting stress on job satisfaction is rarely examined. Yet there is indirect evidence to suggest that commuting stress would have adverse effect on employees' evaluation of their job.

To the extent that commuting requires expending physical, cognitive, and affective effort (Stradling, 2002), we contend that difficult or demanding commute represents a potential threat to resources. The COR theory suggests that individuals who experience resource loss are more susceptible to future

resource loss, as fewer resources remain for stress resistance (Hobfoll, 1989). Consequently, exposure to commuting stress may result in negative psychological states such as frustration, anxiety, hostility, and feelings of time pressure (see e.g., Hilbrecht, Smale, & Mock, 2014; Koslowsky, Kluger, & Reich, 1995; Wener, Evans, & Boatley, 2005; White & Rotton, 1998). These negative psychological experiences, when transferred to the work domain, can adversely affect performance of job-related responsibilities. The ensuing struggle to meet job-related expectations because of commuting can result in employees feeling overwhelmed and therefore experience reduced quality of work life (Frone, Russell, & Cooper, 1992). In a study that examined the potential physiological and behavioral outcomes following participants' actual commute to work, Schaeffer, Street, Singer, and Baum (1988) found that greater impedance in traffic was associated with elevated systolic and diastolic blood pressure and greater errors on a subsequent proofreading task. Van Rooy (2006) also showed that research participants reported more negative evaluations of unqualified job candidates, following exposure to longer driving distances and higher traffic congestion. It is, thus, hypothesized that:

Hypothesis 1: Commuting stress will be negatively related to job satisfaction.

Commuting stress and turnover intention

Tett and Meyer (1993) defined turnover intention as “a conscious and deliberate wilfulness to leave the organization” (p. 262). When faced with resource loss, the COR theory predicts that the need to maintain resources instigates processes that might help to forestall further resource loss (Hobfoll, 1989). Accordingly, it is argued that employees who experience high levels of commuting stress would attempt to reduce the stress by withdrawing from their job (Grandey & Cropanzano, 1999). Thus, withdrawal from the job may be considered as a coping mechanism in response to commuting stress. Because intention to quit has been shown to precede voluntary turnover (Tett & Meyer, 1993), it follows that commuting stress would be related to turnover intention.

However, empirical research on commuting experience and turnover intention is scarce. A notable exception by Novaco et al. (1990) suggested that commute satisfaction was associated with job change. Specifically, Novaco et al. (1990) found that employees who were dissatisfied with their commute were more likely to change their employer 18 months later. Similarly, Kluger (1998) found that commute strain—operationalized as commute resentment, commute fears, and commute worries—was associated with increased tardiness. Focusing on objective aspects of commuting, Zax and Kain (1991) showed that the longer employees have to commute the greater the tendency of quitting their job, while remaining in their present communities. This suggests that employees would choose to leave their jobs rather than

move out of their communities with the intention of getting closer to their current places of work. Deding, Filges, and Van Ommeren (2009) showed that the decision of workers to quit their jobs was related to their commuting experience, more especially the distance involved. In a recent study, Steinmetz, Vries, & Tijdens (2014) sought to investigate the influence working-time characteristics have on employees' intention to remain with their current jobs. The findings showed that when employees are subjected to long commuting time in an effort to physically report to work, they are more unlikely to remain with the same employer. Therefore, it is hypothesized that:

Hypothesis 2: Commuting stress will be positively related to turnover intention.

Burnout

The term *burnout* was introduced to describe individuals' psychological response to prolonged interpersonal stressors on the job. Pines and Aronson (1988) defined *burnout* as "a state of physical, emotional and mental exhaustion caused by long term involvement in situations that are emotionally demanding" (p. 9). Maslach (1982) characterized burnout along three dimensions: emotional exhaustion, depersonalization, and reduced personalized accomplishment. However, exhaustion is generally considered the core dimension of burnout (Kristensen, Borritz, Villadsen, & Christensen, 2005; Maslach, 1982), and exhaustion is most clearly linked to resource loss associated with commuting. Therefore, in the present study, we focus on physical and psychological exhaustion when we refer to *burnout*.

In addition to direct effects, we propose that burnout serves as the pathway through which commuting stress affects organizational outcomes. From the perspective of the COR theory (Hobfoll, 1989), we anticipate that excessive levels of commuting stress would result in high levels of burnout. The COR theory (Hobfoll, 1989) suggests that unusually high or chronic stressors may predispose individuals to a downward spiral whereby burnout ensues due to continuous resource loss (Demerouti, Bakker, & Bulters, 2004). Although the impact of commuting stress on burnout has not been previously examined, there is indirect evidence to suggest that commuting stress would be associated with burnout. In the work stress literature, burnout has been identified as an outcome of physical and psychological job demands (e.g., Bakker, Demerouti, & Verbeke, 2004; Jourdain & Chênevert, 2010; Zapf, Seifert, Schmutte, Mertini, & Holz, 2001). In a similar vein, commuting exerts physical and psychological demands on individuals (Stradling, 2002), and thus exposure to excessive commuting stress can result in individuals feeling burned out.

Our argument about the mediating role of burnout in the relationship of commuting stress with job satisfaction and turnover intention specifies burnout as antecedent of job satisfaction and turnover intention. The impact of

burnout on job satisfaction and turnover intention is well documented (see e.g., Cherniss, 1980; Kalliath & Morris, 2002; Maslach, 1982). Skaalvik and Skaalvik (2009) found, among a sample of Norwegian teachers, that emotional exhaustion and reduced personal efficacy negatively predicted job satisfaction. Similarly, a comparative study by Happell, Martin, and Pinikahana (2003) among psychiatric nurses revealed that burnout positively correlated with the intention of employees to leave their jobs. From the foregoing, it follows that commuting stress could be indirectly related to job satisfaction and turnover intention via burnout. Thus, it is proposed that:

Hypothesis 3: Commuting stress will be positively related to burnout.

Hypothesis 4: Burnout will mediate the relationship of commuting stress with job satisfaction and turnover intention.

Method

Sample and procedure

Participants for the study were recruited using a snowball sampling approach. This approach, which utilizes individuals' professional and social contacts, has been used frequently in management research (e.g., Chen, Powell, & Greenhaus, 2009). Executive MBA students at a large public University in Ghana volunteered in distributing questionnaire packages to employees in their respective organizations. Attached to each questionnaire was a cover letter that explained the objective of the study, assured respondents of confidentiality of their responses, and that participation in the survey was voluntary. The cover letter also indicated that completion and return of the questionnaire would be taken as informed consent. Of 372 surveys that were distributed, 336 completed surveys were returned, representing a response rate of 90.3%. Fifty-three percent of the respondents were males and 48.6% were married. The median age was 25 to 34, with majority (49.7%) of the respondents within this age category, 16.8% age 18 to 24, 20.1% age 35 to 44%, 10.2% age 45 to 54, and 3.3% age 55 and older. About 46% of the respondents were junior staff, 36% were in middle management positions, and 11% were in senior management positions. In terms of level of education, 60.7% of the respondents had a bachelor's degree, 24.5% had postgraduate qualification, 9.3% had a diploma, and 5.7% had at least secondary school certificate. On the average, respondents worked 37 hours per week and reported spending 123.45 ($SD = 82.59$) minutes commuting to and from work daily.

Measures

Commuting stress

Commuting stress was measured with a 10-item instrument developed by the researchers. Our decision to develop a new instrument was informed by the

lack of an appropriate instrument to measure commuting stress. Although Novaco et al.'s (1990) Subjective Impedance Scale has been frequently used to measure commuting stress, most of the items on that instrument apply mainly to drivers, making them less relevant to commuters who do not drive.¹ Our 10-item instrument is unidimensional and is designed to assess individuals' subjective experience of their commute to and from work. Four of the items were adapted from Novaco et al.'s (1990) scale. Sample items include "It takes me longer than necessary to commute to work in the morning" and "I worry about my journey to and from work due to traffic accidents." All the items were rated on a 5-point scale ranging from 5 (*strongly agree*) to 1 (*strongly disagree*). The scale's alpha reliability in this study was .90.

Burnout

We measured burnout with the 6-item personal burnout subscale of the Copenhagen Burnout Inventory (CBI) developed by Kristensen et al. (2005). The personal burnout component of the CBI assesses "the degree of physical and psychological fatigue and exhaustion" experienced by a person regardless of occupational status (Kristensen et al., 2005, p. 197). A sample item is "how often do you feel physically exhausted." All items were scored on a 5-point rating scale ranging from 1 (*never*) to 5 (*always*), with high scores reflecting high degree of burnout. The Cronbach alpha for this scale was .76.

Job satisfaction

Job satisfaction was measured using the average score on a 5-item version of the Brayfield-Rothe Satisfaction Index (Brayfield & Rothe, 1951). However, one item with low square multiple correlation was removed to improve the reliability of the scale. A sample item is "most days I am enthusiastic about my job." The scale Cronbach's alpha in this study was .62.

Turnover intention

Turnover intention was measured with three items. A sample item is "in the next 3 months I intend to leave this organization." The three items were averaged to obtain a composite turnover intention score: "In the next few months I intend to leave this organization," "In the next few years I intend to leave this organization," and "I occasionally think about leaving this organization." The coefficient alpha for the scale in this study was .82.

Demographic/control variables

Demographic variables measured in this study were age, gender, marital status, level of education, and job level. Age was measured with a single, close-coded response ranging from 1 (*18-24*), 2 (*25-34*), 3 (*35-44*), 4 (*45-54*), and 5 (*55 and above*). Gender was coded as 0 (male) and 1 (female). Marital status was coded as 0 (single) and 1 (married). Education was also

measured with a single, close-ended item with responses ranging from 1 (*high school education*), 2 (*polytechnic diploma/associate degree*), 3 (*bachelor's degree*), and 4 (*postgraduate degree/professional qualification*). Job level was coded as 1 (*junior staff*), 2 (*middle management*), and 3 (*top management*). In addition to these demographic variables, working hours and commuting time were included as control variables in this study, as long working hours and commuting times have been found to be associated with various measures of employee well-being and work outcomes including burnout, satisfaction, and turnover intentions in previous studies (e.g., Ng & Feldman, 2008; Novaco & Gonzales, 2009; Shirom, Nirel, & Vinokur, 2010; Steinmetz et al., 2014). Working hours were measured based on the average number of hours participants work per week, whereas commuting time was measured based on the average amount of time (in minutes) participants commute to and from their workplaces daily.

Analytical strategy

First, because our commuting stress scale was a combination of existing and newly created items, we conducted exploratory factor analysis (EFA) followed by confirmatory factor analysis (CFA) to validate the instrument. Next, another CFA was conducted to assess the distinctiveness of our study variables. As recommended by Hall, Snell, and Foust (1999), we created parcels by grouping items within each scale to serve as indicators of the latent variable when the number of items for the variable exceeded three. Specifically, we created three parcels for commuting stress, three parcels for burnout, and two parcels for job satisfaction. Turnover intention was included using three items as indicators. A hypothesized four-factor model was compared to a series of nested theoretically alternative models, based on chi-square difference test. Next, we tested our hypothesized relationships simultaneously to reduce Type I error while increasing statistical power. We included two control variables, working hours and commuting time, in our model as manifest variables. Based on previous research (e.g., Ng & Feldman, 2008; Novaco & Gonzales, 2009; Shirom et al., 2010; Steinmetz et al., 2014), working hours and commuting time were allowed to relate with all endogenous variables in the model (i.e., burnout, job satisfaction, and turnover intention). Additionally, commuting time was allowed to co-vary with commuting stress due to the positive correlation between both variables.

We compared our hypothesized model to an indirect model and an additive (nonmediated) model to determine the best fit of the data. The overall fits of the models were examined using the Comparative Fit Index (CFI), the Non-Normed Fit Index (NNFI), standardized root mean square residual (SRMR), and the root mean square error of approximation (RMSEA). Indices of model fit suggest that CFI and NNFI values higher than .90, RMSEA values

no higher than .08, and SRMR values no higher than .10 are indicative of a well-fitting model (Browne & Cudeck, 1992; Hu & Bentler, 1999). The EFA was performed using IBM SPSS 21.0, whereas the CFA and the test of the structural model were conducted using structural equation modelling in IBM AMOS 21.0.

Results

As indicated earlier, we first conducted an exploratory factor analysis to assess the factor structure of our commuting stress scale. Using principal axis factoring as the extraction method, the analysis produced only one factor with eigenvalue greater than 1. This single factor explained 53.71% of the total variance. A follow-up CFA was conducted in which all items were specified to load on only one factor, as suggested by results from the exploratory factor analysis. As expected, this model represented a good fit to the data, $\chi^2(29) = 56.64$, $p < .01$, SRMR = .026, RMSEA = .053, CFI = .98, NNFI = .97. As shown in Table 1, factor loadings for all the 10 items were significant and ranged from .47 to .83.

The results of the CFA testing the distinctiveness of the study variables are presented in Table 2. The results indicated that the hypothesized four-factor model fits the data well, $\chi^2(59) = 148.55$, $p < .001$, SRMR = .059, RMSEA = .061, NNFI = .93, CFI = .95. The hypothesized four-factor model was a better fit to the data compared to alternative three-factor model ($\Delta\chi^2 = 88.68$, $\Delta df = 3$, $p < .001$), two-factor model ($\Delta\chi^2 = 345.59$, $\Delta df = 5$, $p < .001$), and one-factor model ($\Delta\chi^2 = 860.52$, $\Delta df = 6$, $p < .001$), indicating support for the distinctiveness of the constructs in this study.

The means, standard deviations, and correlations of the study variables are presented in Table 3. As shown in Table 3, commuting stress was significantly correlated with burnout ($r = .28$, $p < .01$) and turnover intention ($r = .15$, $p < .05$). Commuting time was also significantly correlated with commuting stress ($r = .35$, $p < .01$). Similarly, burnout was significantly correlated with job satisfaction ($r = -.37$, $p < .01$) and turnover intention ($r = .40$, $p < .01$).

Table 1. Standardized factor loadings for items on the commuting stress scale.

Item	Loading
It takes me longer than necessary to commute to work in the morning.	.68
It takes me longer than necessary to commute back home after work.	.71
I am unable to avoid heavy traffic on my way to work.	.78
I am unable to avoid heavy traffic on my way back home after work.	.66
I have to leave home earlier than I would like because of traffic congestion.	.83
Traffic congestion is a frequent inconvenience.	.83
My journey to and from work is often interrupted by traffic signals.	.63
I am satisfied with my journey to and from work. ^a	.47
My journey to and from work is unpleasant.	.68
I worry about my journey to and from work due to traffic accidents.	.53

^aItem responses are reverse-scored.

Table 2. Results of confirmatory factor analysis showing distinctiveness of study variables.

Model	χ^2	<i>df</i>	CFI	NNFI	SRMR	RMSEA	$\Delta\chi^2$ (Δdf)
Model A: Hypothesized four-factor model	137.59**	59	.95	.94	.053	.063	—
Model B: Three-factor model (combining JS and TI)	224.89**	62	.90	.87	.071	.089	87.30** (3)
Model C: Two-factor model (combining JS, TI, and BO)	489.89**	64	.73	.67	.120	.141	352.30** (5)
Model D: One-factor model	1010.06**	65	.41	.29	.162	.208	872.17** (6)

Notes. CFI = Comparative Fit Index; NNFI = Non-Normed Fit Index; SRMR = standardized root mean square residual; RMSEA = root mean square error of approximation; JS = job satisfaction; TI = turnover intention; BO = burnout.

Model A served as the baseline model for comparisons.

** $p < .01$.

Table 3. Descriptive statistics and zero-order correlations.

Variable	<i>M</i>	<i>SD</i>	1	2	3	4	5	6	7	8	9	10	11
1 Age	2.34	0.98	—										
2 Gender	0.47	0.5	-.18**	—									
3 Job level	1.62	0.66	.28**	-.01	—								
4 Marital status	0.49	0.49	.49**	-.03	.36**	—							
5 Education level	4.06	0.83	.04	.08	.24**	.01	—						
6 Working hours	37.01	16.43	.02	-.06	-.01	.05	.02	—					
7 Commuting time ^a	123.96	81.46	.06	.16**	.11	.04	.11*	.03	—				
8 Commuting stress	3.47	0.85	.12*	.05	.10*	.09*	-.01	-.01	.35**	(.90)			
9 Burnout	2.59	0.59	-.11*	.02	-.01	.00	-.02	.06	.15**	.28**	(.76)		
10 Job satisfaction	3.43	0.64	.09*	-.06	.05	.10*	.08	.07	.04	-.01	-.37**	(.62)	
11 Turnover intention	2.86	0.94	-.03	.07	.03	-.01	.01	-.03	.02	.15**	.40**	-.44**	(.82)

Notes: $N = 336$. Cronbach's alphas are in parentheses.

^aCommuting time was measured in minutes.

* $p < .05$, ** $p < .01$.

Table 4 presents results for the test of our structural model. Our hypothesized model (Model A) in which commuting stress has direct and indirect effects (through burnout) on job satisfaction and turnover intention fit the data well, $\chi^2(79) = 161.25$, SRMR = .049, RMSEA = .056, CFI = .95, NNFI = .93. As indicated earlier, we compared our hypothesized model with an indirect model (Model B) in which commuting stress had no direct paths to job satisfaction and turnover intention. The chi-square difference test showed a significant degradation in model fit compared to the hypothesized

Table 4. Results of the comparison of hypothesized model with alternative models in structural equation modelling.

Model	χ^2	<i>df</i>	CFI	NNFI	SRMR	RMSEA	$\Delta\chi^2$ (<i>df</i>)
Model A: Hypothesized model	161.25**	79	.95	.93	.049	.056	—
Model B: Indirect model	167.97**	81	.95	.93	.052	.057	6.45* (2)
Model C: Additive model	197.27**	81	.93	.91	.083	.065	36.02** (2)

Notes. CFI = Comparative Fit Index; NNFI = Non-Normed Fit Index; SRMR = standardized root mean square residual; RMSEA = root mean square error of approximation.

Model A served as the baseline model for model comparisons.

* $p < .05$, ** $p < .01$.

model, $\Delta\chi^2(2) = 6.45$, $p < .05$, suggesting that our hypothesized model was a better fit to the data than an indirect model. Finally, we compared our hypothesized model to nonmediated or additive model (Model C) in which paths from burnout to job satisfaction and turnover intention were deleted. Again, this model showed worse fit to the data compared to our hypothesized model, $\Delta\chi^2(2) = 36.02$, $p < .01$. Therefore, Model A was chosen as the final model to test the hypothesized relationships.

Figure 2 presents standardized path coefficients for our structural model. As shown in Figure 2, the direct path from commuting stress to job satisfaction was not significant ($\beta = .15$, $p > .05$). Thus, Hypothesis 1, which suggested that commuting stress would be negatively related to job satisfaction, was not supported. The direct path from commuting stress to turnover intention was not significant ($\beta = .07$, $p > .05$). However, as can be seen in Table 3, there was a significant positive correlation between commuting stress and turnover intention ($r = .15$, $p < .01$), which provides support for the hypothesis that commuting stress would be positively related to turnover intention (Hypothesis 2). The nonsignificant relationship between commuting stress and turnover intention in the structural model indicates that the relationship may be mediated by burnout. Hypothesis 3 predicted that commuting stress would be positively related to burnout. As shown in Figure 2, the direct path from commuting stress to burnout was positive and significant ($\beta = .36$, $p < .001$). Therefore, Hypothesis 3 was supported.

The SEM results suggest that burnout mediated the relationships of commuting stress with job satisfaction and turnover intention. We examined the mediated relationships by using the SEM test of significance of indirect

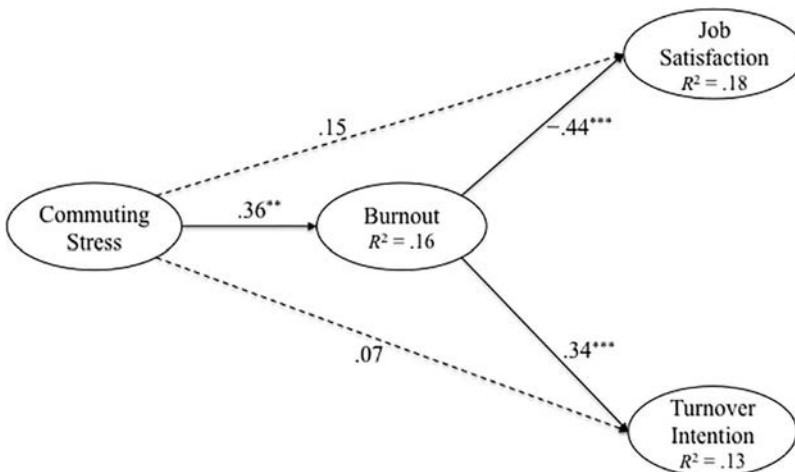


Figure 2. Summary of standardized path coefficients for the hypothesized model. *Notes.* Solid lines represent significant paths and dotted lines represent non-significant coefficient. The effects of controls are not shown. Values represent standardized estimates. ** $p < .01$, *** $p < .001$.

effects. The results revealed that the indirect effect of commuting stress on turnover intention ($\beta = .12, p < .001$) was significant. This suggests that burn-out mediated the relationship between commuting stress and turnover intention. Similarly, the results showed a significant indirect effect of commuting stress on job satisfaction ($\beta = -.16, p < .001$). Thus, burnout significantly mediated the relationship between commuting stress and job satisfaction. Therefore, Hypothesis 4a and Hypothesis 4b, which suggested that burnout would mediate the effect of commuting stress on job satisfaction and turnover intention, were supported.

We further cross-validated the SEM results using bootstrap. Following procedures suggested by Shrout and Bolger (2002) we created 5,000 bootstrap samples to estimate the confidence intervals for the indirect effects of commuting stress on job satisfaction and turnover intention with the bias-corrected percentile method. We found that the 95% confidence interval for the indirect effect of commuting stress on job satisfaction ranged from $-.09$ to $-.25$, and the 95% confidence interval for the indirect effect of commuting stress on turnover intention ranged from $.07$ to $.19$. Because none of the confidence intervals contains zero, these results cross-validate those obtained from SEM test of significance of indirect effects.

We also performed multigroup SEM to examine whether the findings obtained with the full sample were invariant across gender. First, we specified the hypothesized model separately for males and females. Next, to examine whether the strength and direction of the relationship were equivalent across gender, we specified two simultaneous between-group models. In the first between-group model all the model parameters were freely estimated for males and females. In the second between-group model, the hypothesized relationships were constrained to be equal across gender. A significant increase in the chi-square for the constrained model implies that the assumption of invariance would not be tenable (Byrne, 2010). The results of the multigroup SEM analyses are presented in Table 5. The within-group analysis indicated that the hypothesized model fit the data for males, $\chi^2(79) = 142.61, p < .001, SRMR = .057, RMSEA = .067, CFI = .93, NNFI = .91$, and females as well, $\chi^2(79) = 119.76, p < .001, SRMR = .065, RMSEA = .057, CFI = .95, NNFI = .93$. The results for

Table 5. Goodness-of-fit information for comparison of men and women.

Model	χ^2	df	CFI	NNFI	SRMR	RMSEA
Male (within-group), $n = 178$	142.61**	79	.93	.91	.057	.067
Female (within-group), $n = 158$	119.76**	79	.95	.93	.065	.057
Unconstrained between-group model	262.36**	158	.94	.92	.056	.044
Constrained between-group model	282.18**	178	.94	.93	.064	.042

Notes. CFI = Comparative Fit Index; NNFI = Non-Normed Fit Index; SRMR = standardized root mean square residual; RMSEA = root mean square error of approximation.

** $p < .01$.

between-group analyses indicated that there were no significant differences between males and females with regards to the parameter estimates for the hypothesized relationships, $\Delta\chi^2(20) = 20.18$, $p > .05$. This suggests that the hypothesized model was invariant across gender.

Assessment of common method variance

Because our data were collected from the same source, there is the potential problem of common method variance (CMV). To ascertain whether a general factor accounted for a significant amount of variance among our measures, we conducted Harman's one-factor test. This procedure involved entering all the items in EFA with unrotated principal axis factoring. The presence of substantial amount of CMV would be indicated by extraction of only one factor in the analysis or one general factor accounting for much of the covariance amount the variables. The results showed that seven factors emerged with eigenvalues greater than 1. The seven unrotated factors explained 59.03% of variance, and the first factor accounted for only 23.85% of the total variance. This suggests that common method bias was not a serious concern in this study.

Discussion

Prior research has shown that commuting represents a significant source of stress, and that commuting stress may have significant implications for employees and organizations (Kahneman et al., 2004; Novaco et al., 1990; Novaco & Gonzales, 2009). The purpose of this study was to expand our understanding of the pathway through which commuting stress influences employees work outcomes. Drawing on the COR theory (Hobfoll, 1989), we proposed that commuting stress would be related to lower levels of job satisfaction and greater turnover intention, and that these relationships would be mediated by burnout. Consistent with our predictions, we found that commuting stress was associated with high levels of burnout and turnover intention. We also found that commuting stress was indirectly related to job satisfaction and turnover intention through burnout. Our results also revealed no significant gender differences in the relationships of commuting stress with job satisfaction and turnover intention. Thus, our model that burnout provides a pathway through which commuting stress relates to work outcomes applies to males and females. Overall, our findings suggest burnout as an important mediator in the relationship of commuting stress with job satisfaction and turnover intention.

The present study adds to the existing literature on situational antecedents of burnout. Earlier researchers focused predominantly on aspects of the work environment as antecedents of burnout (e.g., Jourdain & Chênevert, 2010), following tenets of the job demands-resources (JD-R) model (Demerouti,

Nachreiner, Bakker, & Schaufeli, 2001). This study is perhaps the first to link commuting stress to burnout and suggests that experiences outside the workplace could contribute to feelings of physical, emotional, and mental exhaustion. Our research also extends existing knowledge about work-related outcomes of commuting. In particular, our findings build on Novaco et al.'s (1990) notion of *interdomain transfer effects*, “whereby the psychological consequences of environmental conditions in one life domain (home, commuting, work, or recreational) transfer to another, either positively or negatively” (p. 255). The present study suggests that workplace behaviors and attitudes could be influenced by employees’ commuting experiences.

The finding of an indirect relationship between commuting stress and job satisfaction clarifies previous studies that failed to find direct relationship between commuting and job satisfaction. In their study on subjective impedance, Novaco et al. (1990) attributed the absence of a relationship between subjective impedance and job satisfaction to unidentified intervening variables that may obscure the effects of subjective impedance on job outcomes. Our findings suggest that burnout represents one of such intervening variables in the commuting–satisfaction relationship. Drawing on the COR theory (Hobfoll, 1989), it can be argued that efforts to deal with stressful commute possibly deplete personal resources needed to deal with subsequent workplace activities, while priming individuals to construe workplace constraints as more demanding and stressful (Hennessy, 2008), and consequently increasing the possibility of employees evaluating their jobs negatively.

The finding that commuting stress positively predicted turnover intention corroborates previous studies that have shown commuting stress to be related to employees’ intention to quit their jobs (e.g., Deding et al., 2009; Novaco et al., 1990; Steinmetz et al., 2014). However, this study is perhaps the first empirical research to address the question of why commuting stress relates to turnover intention. The present study adds to the literature on commuting stress and turnover intention by linking the two through the process of burnout. Our finding demonstrated that commuting stress was indirectly related to turnover intention via personal burnout. This suggests that employees who experience high commuting stress are more inclined to consider quitting their job, and commuting stress exerts its influence on their intention to leave through the experience of burnout symptoms. As argued earlier, unusually stressful commuting experiences might result in loss of personal resources such as time and energy, which could be invested in other life domains. Consequently, consistent with COR theory (Hobfoll, 1989, 2002), quitting the job becomes an important consideration in helping to prevent further resource loss.

Practically, our findings suggest that employees and employers are sustaining hidden costs associated with commuting stress. Such indirect costs of employee transportation might be manifested in employee burnout, intention

to quit, and negative employee attitude to work. In developing countries like Ghana, employees' commuting to and from work is construed mainly as the responsibility of employees, with employers playing a limited role. We suggest that employers can help minimize the negative impact of commuting by adopting other favorable and healthy forms of work (i.e., flexible work) especially the teleworking mode (working from and reporting via telephone or a computer) instead of employees physically commuting to the workplace. Studies have shown that employees who adopt telecommuting experience positive outcomes such as increased autonomy over working conditions, increased work productivity and job satisfaction, decreased stress, and greater control over managing child care (see e.g., Gajendran & Harrison, 2007; Maruyama & Tietze, 2012). The long hours spent commuting can be used rather as a great asset when work is done at home and will further reduce the stress that comes with commuting to work and the negative consequences that accompany the process (see Olorunfemi, 2013). Organizations could also help minimize commuting stress by making transportation arrangements for employees, which may involve buses picking employees from designated locations. This would be especially helpful for employees who rely on public transport services by reducing the time spent waiting at transport terminals.

Limitations and suggestions for future research

The present study is not without limitations. First, the cross-sectional nature of the study precludes making causal inferences based on the data. Studies adopting longitudinal design should help in establishing the temporary order of the path from commuting stress to outcome variables. Secondly, this study focused mainly on burnout as the explanatory variable in the relationship between commuting stress and work outcomes. However, commuting stress may impede other vital processes such as recovery and sleep, which may in turn influence employee well-being (see e.g., Åkerstedt et al., 2012; Van Hooff, 2015). In addition, the alpha coefficient for job satisfaction in the present study was quite low (.62), which may partly account for the nonsignificant relations reported earlier. Development of a more reliable instrument for job satisfaction will be useful in measuring the construct in future research particularly in Ghana. Furthermore, other variables such as control, salary, and intrinsic benefit of commuting (Evans & Carrère, 1991; Frazier et al., 2011; Redmond & Mokhtarian, 2001), which might attenuate the deleterious impact of commuting stress were not examined in this study. Future research examining these variables would provide a nuanced picture of the mediating and moderating mechanisms that explain commuting stress outcomes. Finally, future research should extend our findings relating to the outcomes of commuting stress by considering other domains such as job performance, productivity, and family-related outcomes.

Conclusion

Commuting constitutes a major source of stress for most employees with affective, motivational, as well as physiological consequences. This study has shown that commuting stress influences employees' evaluation of their jobs and their intention to quit their jobs. The study has also revealed an underlying mechanism for the outcomes of commuting stress by providing evidence that burnout is a significant mediator between commuting stress and work outcomes.

Note

1. Example items on Novaco et al.'s (1990) Subjective Impedance Scale include "it is necessary to apply brake while driving from work" and "driving speed is reduced by heavy traffic to work."

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