Moderating the Harmful Effects of Police Nightshift Work on Work–Family Balance by Adjusting Shift Autonomy

Abstract

Maintaining a balance between work and family is essential. Clarifying how nightshift work impedes this balance is crucial. The clarification concerns the mediation and moderation of the effect of nightshift work by work hazards and shift autonomy. This study analyzed survey data on 793 police officers in Hong Kong, China. Results showed that the duration of nightshift work negatively affects work–family balance. This effect partly involved the mediation of work hazards, and it was weak when the shift autonomy was high. The lower shift autonomy of female officers during nightshift work than their male counterparts was partly responsible for the former's lower work–family balance. These results imply the applicability of conservation of resources theory to promote work–family balance.

Keywords: work–family balance; nightshift work; work autonomy; work hazards

According to conservation of resources theory, working people's family life thrives with resource gain as opposed to loss from the workplace, which highlights the boon of conserving resources (Landolfi et al., 2021). However, the workplace can restrain the gain and its effectiveness in mitigating the loss, according to institutional theory, which emphasizes the influences of institutional norms or roles on the member of the institution (Blair-Loy & Wharton, 2002; Jiao et al., 2005). The restraint has remained an issue for examination, as in the present study of the work-family balance of police officers. Herein, nightshift work and work hazards represent resource losses, autonomy to schedule shiftwork registers a resource gain, and the police institution is notably restraining its members (Brossoit et al., 2020; Raper et al., 2019; Senjo, 2011).

Achieving a balance between work and family, as the harmony and cooperation between the two domains, is vital to avoid conflicts and induce work, family, and life satisfaction among employees (Johari et al., 2018; Williams et al., 2016). Work–family balance means that neither work nor family obligation overwhelms the other aspect and that work and family domains provide leeway to each other. However, nightshift work, which is an obligation to work at night, can be overwhelming because this period necessitates sleeping and thus deprives family life in the daytime. The state of overwhelming is also likely to arise from hazards induced by nightshift work, especially among police officers (Gerber et al., 2010; Perrucci et al., 2007; Vila et al., 2002). In comparison with day work, police nightshift work exposes physiologically incapable officers to more hazards due to the highly perilous environment and crime rate. Work hazards, which cause demand, stress, and conflict, are likely to plague work and family life, and thus work–family balance (Williams et al., 2016). The harmful effect originating from nightshift work tends to occur in the absence of autonomy to take, reschedule, or swap nightshift work (Ma et al., 2015; Haar et al., 2019).

Shift autonomy is a form of control over work schedules or timing that can sustain work–family balance (Fenwick & Tausig, 2001).

Moreover, shift autonomy can explain part of the disadvantages experienced by female police officers when stressed by nightshift work; such disadvantages likely arise from the low shift autonomy of female officers. Nonetheless, although nightshift work may be detrimental to work–family balance, the mediation and the mitigation of the detrimental effect through work hazards and shift autonomy remain unclear. For instance, work or schedule autonomy has not displayed stress-buffering effects (De Carlo et al., 2019; Peeters & Rutte, 2005). To clarify the mediation and mitigation effects of shift autonomy, this study aims to show the detrimental effects of nightshift work and work hazards and the disadvantages to female officers in terms of work–family balance. Even the main effects of nightshift work, shift autonomy, and work hazards on balance are unclear or debatable (Gerber et al., 2010; Gregory et al., 2013). Therefore, all main and moderation effects require empirical clarification in this study of Chinese police in Hong Kong.

The current study is valuable to clarify ways to sustain work–family balance. Such balance represents an accomplishment in life, implying its satisfaction (Johari et al., 2018; Landolfi et al., 2021). Specifically, such balance is intrinsically desirable as a state of fit or harmony due to the absence of discrepancy and conflict (Adkins & Premeaux, 2019; Johari et al., 2018; Williams et al., 2016). The balance is also desirable because of its contributions to satisfaction and job performance and in the reduction in stress, anxiety, and depression (Adkins & Premeaux, 2019; Grzywacz & Bass, 2003; Johari et al., 2018). Moreover, this balance is conducive to career success (Savickas, 2002) due to its ability to prevent work–family conflict, which is cost-saving (Hammond et al., 2015). Such prevention sustains

family, work, community, and life satisfaction and reduces strain, distress, and burnout (Griffin & Sun, 2018; Hassan et al., 2010). Such satisfaction involves relationships with various family members, including partners and others (Landolfi et al., 2021; Williams et al., 2016). Work-family balance thus functions to reproduce the family, work, and related culture (Greer & Peterson, 2013). Such balance reflects the adaptability and adjustment of the working person (Adkins & Premeaux, 2019; Greer & Peterson, 2013). Nevertheless, work-family balance is a conservative favor in conserving the family and work (Greer & Peterson, 2013).

The part of work in work–family balance necessarily involves shiftwork, especially in police work or other jobs that provide services throughout the day (Taylor et al., 2019). Shiftwork, especially at night, is nonstandard, demanding, and disrupting to workers (Mills & Taht 2010). Therefore, it is stressful and can generate sleep and health problems or disorders (Gerber et al., 2010; Perrucci et al., 2007). Shiftwork also weakens work quality and social networking or capital, provoking conflicts (Gregory et al., 2013; Jacobsen & Fjeldbraaten, 2018; Requena, 2003). Moreover, shiftwork results in smoking and overweight problems and impedes primary care use (Gerber et al., 2010; Kivimaki et al., 2010). Nightshift work is stressful and threatening, and it reduces sleep and deteriorates job performance (Claudia Ma et al. 2015; James, James, & Vila, 2018). Hence, the harmful effects of nightshift work on workers and their performance need an investigation.

The harmful effects of shiftwork can happen during work. Work hazards, risk, or safety are important concerns because of their costliness and disadvantages (Kirschenbaum et al. 2000). This issue heightens stress levels and worsens job performance, social capital, and work quality (Requena, 2003; Shane, 2013). Work hazards, such as injury in fighting crimes

or maintaining public order, are common in police work, which requires officers to confront crimes and other risks (Marenin, 2016).

Shift autonomy, which involves selecting and changing one's shift, is a way to mitigate the harm of shiftwork. This autonomy is a kind of job autonomy, job control, schedule control, or job flexibility that deals with one's work (Moen et al., 2011; Pisarski et al., 2002). Job autonomy tends to be normative and desirable in capitalistic development to avoid conflicts in work and other domains (Steinberg, 2003). Shift autonomy reflects supervisor support, flexibility, friendliness, or transformational or considerate leadership (Hammond et al., 2015) because this condition is possible only with the supervisor's approval. In policing, shift autonomy arises from the officer's bargain with his or her supervisor about the opportunity to swap shiftwork. Job autonomy is essential due to its facilitation of cohesion, involvement, performance, productivity, and work safety and its reduction of turnover (Kim & Stoner, 2008; Man & Lam, 2003; Thibault Landry et al., 2017). Job autonomy also sustains justice, social support, social capital, and attenuated work and family conflicts (Benton, 2015; De Carlo et al., 2019; Hammond et al., 2015; Schieman & Glavin, 2017). Furthermore, job autonomy sustains job and life satisfaction, self-esteem, work quality, meaningfulness, proficiency, and positive affect and dampens personnel's burnout (Martela & Riekki, 2018; Peeters & Rutte, 2005; Schieman & Glavin, 2017; Wheatley, 2017).

The impacts of shiftwork are relevant to the Hong Kong police because shiftwork is evident in policing (Siu et al., 2015). Work hazards due to crime prevention and control and order maintenance are another policing characteristic (Marenin 2016). Policing also seems to be an anomaly because of its coercive work in the free society (Dick, 2005; Marenin, 2016). The police officer can be a street-corner politician to maintain street justice (Adorjan & Lee,

2017; Marenin, 2016). This situation invokes the stress to maintain impartiality in policing, which is notable in Hong Kong's police force (Hui & Au, 2014). However, police officers do not have much autonomy or control over their work, typically authoritarian or bureaucratic (Marenin, 2016). Autonomy depends on the supervisors' support (Taylor et al., 2019). Moreover, policing is a primarily masculine occupation due to using force (Chan & Ho, 2013). Therefore, female police officers typically perform feminine or soft work, such as dealing with the community, women, and children (Chan & Ho, 2013). These duties and situations are stressful and conflictual, and they make balancing work and family life a crucial concern for police officers, including those in Hong Kong (Li et al., 2019; Qureshi et al. 2019). This study of work–family balance is crucial to advance the knowledge based on the Hong Kong police force, which applies the British model in a Chinese context (Chan & Ho, 2013; Li et al., 2019). The British model establishes an efficient, honest, and corruption-free police force in Hong Kong (Jiao, 2010; Siu et al., 2015). Police are essential for this research because of their crucial functions, including social control and peace and justice maintenance (Adorjan & Lee, 2017; Marenin, 2016).

Resource Conservation Account

The main and mediation effects among nightshift work, shift autonomy, work hazards, work–family balance, and gender are explicable using conservation of resources theory (or conservation theory simply). This theory emphasizes that the conservation of resources or prevention of resource loss is impetus or influential (De Carlo et al., 2019; Wright & Hobfoll 2004). A resource is an energy or material, including personal vigor and stamina, useful to generate work (Siu, 2013). Resource loss is noxious and stressful, whereas the availability of the resources is functional and stress-buffering (i.e., mitigates stressful effects). The loss can stem from work demand and hazards, whereas resource conservation depends on job

autonomy, control, and schedule control (De Carlo et al., 2019; Glavin & Schieman, 2012). This theory highlights the primacy of the impact of resource loss over that of resource gain (Peng et al., 2019). Consistent with the theory, resource conservation enables work commitment and engagement, connectedness, upward mobility, career success, and satisfaction, preventing burnout (Bakker & Oerlemans, 2019; Bozionelos & Wang, 2006; Crawford et al., 2010; Huynh et al., 2012).

According to conservation theory, nightshift work is likely to erode work–family balance. Nightshift work represents losses of physical and social resources depriving sleep and social support only available in the daytime (Taylor et al., 2019). Resource loss also arises from increased work demand in the nightshift to tackle felonies at night and testify in court in the daytime (Senjo, 2011). Work demand impedes the worker's work–family balance (Haar et al., 2019). Moreover, fatigue accrues to nightshift work because of deviation from normal biological rhythm and adjustment required to the nightshift (Mills & Taht, 2010; Vila et al., 2002. Meanwhile, daytime sleep deprives family life and resources (C. Ma et al., 2015; Senjo, 2011). Resource loss from nightshift work thus drains the resources of energy and social conditions.

Nightshift work is likely to provoke work hazards, partly consistent with conservation theory. It diminishes the worker's alertness, other cognitive resources, and access to social resources, especially those only available during the daytime, to prevent or avoid hazards (Mills & That, 2010; Requena, 2003; Taylor et al., 2019). Resource loss from nightshift work leads to fatigue because of circadian disruption and incapability to circumvent hazards (C. Ma et al., 2015; Senjo, 2011). Moreover, nightshift work encounters more crimes, especially violent and dangerous felonies (C. Ma et al., 2015).

Nightshift work is thus likely to incur work hazards and dampen work–family balance; such influences are more plausible than that of work hazards and work–family balance on nightshift work. The latter's effects are unlikely because nightshift work is primarily an administrative arrangement assigned by the superior rather than a response to work or family conditions (C. Ma et al., 2015; Taylor et al., 2019).

Conservation theory suggests that work hazards can erode work–family balance. Work hazards also represent resource loss, notably in energy and personal characteristics such as health and functioning (Gillen et al., 2002; Kirschenbaum et al., 2000). Meanwhile, work–family balance benefits from personal resources (Siu, 2013).

By contrast, shift autonomy is likely to enhance work–family balance. As previously stated, shift autonomy is a part of work autonomy, representig a work resource or its conservation (de Witte et al., 2007). This resource is a conditional one registering social influence to obtain support at work (Franzen & Hangartner, 2006). Work autonomy prevents work demand and resource depletion (Costigan et al., 2003) and enables work–family balance. Moreover, such autonomy prevents work–family conflict (De Carlo et al., 2019; Haar et al., 2019). Nevertheless, such beneficial effects are not certain because of contradictory findings (Gregory et al., 2013; Schieman & Glavin, 2017). Therefore, investigating the impact of shift autonomy is necessary.

Nightshift work is likely to impair work–family balance of female police officers more intensely than that of the male ones. In other words, the former is more likely to suffer harmful effects from nightshift work than the latter. According to conservation theory, this

phenomenon is attributable to the weak resources of female officers; it happens among the police when the female officers is a minority (i.e., 8% in Hong Kong) or even represent a token to obtain inadequate collective resources (Duxbury & Halinski, 2018). In general, female workers have less access to resources in the workplace than their male counterparts (Cocchiara et al., 2010; Gordon, 2008). Consequently, female workers have few resources to withstand stress (Michael et al., 2006; Osthus, 2007). In addition, shiftwork is disadvantageous and conflictual to female workers (Tuttle & Garr, 2012).

The harmful effect of nightshift work in work–family balance is low when the shift autonomy is high. In other words, shift autonomy can mitigate the negative impact of nightshift work on work–family balance. Considering conservation theory, shift autonomy represents a work resource to buffer the stress of nightshift work, which reflects the argument of the theory that a resource can relieve the harm of resource depletion, such as those that stem from the work demand of nightshift work. The theory also supports the view that the worker's control buffers the stressful effect of the demand of the work (Grebner et al., 2004; Hughes & Parkes, 2007). The theory explains the mitigation effect of resources on the noxious impact of demand (de Carlo et al., 2019). The mitigation effect is consistent with the findings of existing research, which state that work autonomy buffers the noxious effects of work stress or demand (Bal et al., 2017; de Carlo et al., 2019; de Witte et al., 2007; Kim & Stoner, 2008; Park & Searcy, 2012; Shih et al., 2011). Moreover, work autonomy buffers the detrimental effect of family demand on work–family balance (Haar et al., 2019). However, work autonomy increases the stressful impacts of work demand on burnout (Peeters & Rutte, 2005). Therefore, the stress-buffering effect of shift autonomy requires further investigation.

Conservation theory and relevant studies suggest the following hypotheses about the police officer:

1. Nightshift work is predictive of low work–family balance.
    1.1. Nightshift work is more predictive of the low work–family balance of the female officer than her male counterpart.
2. Work hazards are predictive of low work–family balance.
3. Nightshift work is predictive of work hazards.
4. Shift autonomy is predictive of work–family balance.
    4.1. Work autonomy is more predictive of work–family balance with more nightshift work.

Institutional Account

These hypothesized effects are questionable, considering the institutional account, which emphasizes the overwhelming influence of the institution. Accordingly, the account maintains that the institution, such as the police, influences its members, including their workings (Crank, 2003). The police institution is exceptionally overwhelming to select its members and for the members' select to enter the institution reciprocally (Chan & Ho, 2013; Marenin, 2016). This exceptionality and selectivity are likely to constrain members' variability and susceptibility (Chu et al., 2007; Oberlechner & Nimgade, 2005). The police institution is likely to minimize the hypothesized effects based on conservation theory.

Particularly, the institutional account suggests that shift autonomy is ineffective in mitigating the effect of nightshift work, because of the inability and ineffectiveness of shift autonomy in the police institution (Crank, 2003; Maurya & Agarwal, 2018; Raper et al., 2019). When the police officer cannot select the amount of nightshift work, his or her shift autonomy cannot be effective. Such non-selectivity and ineffectiveness are likely to rest on the disciplinary and inflexible norms and roles of the police institution (Crank, 2003; Maurya

& Agarwal, 2018; Raper et al., 2019). This condition happens in the police institution in Hong Kong as well as in other places (Chan & Ho, 2013; Raper et al., 2019; Siu et al., 2015).

The institutional account thus necessitates a test of the hypotheses in the police institution by controlling for nightshift selectivity and background and response characteristics. Nightshift selectivity refers to the predictability of the amount of nightshift work by background characteristics, and conversely, nightshift non-selectivity refers to the residual from the prediction. Background characteristics that are likely to affect work–family balance, nightshift work, work hazards, and/or shift autonomy include the officer's living arrangements and demographic, body, and work characteristics. The demographics include age, gender, and education; the body characteristics include body mass and chronic illness; the work characteristics have tenure, rank, and duty; and the living arrangements include marriage, parenthood, and other family responsibilities. Work characteristics and living arrangement affect work–family balance (Haar et al., 2019), and all factors impact work hazards (Jacobsen & Fjeldbraaten, 2018; Schieman & Glavin, 2017; Tuttle & Garr, 2012). Demographic and work characteristics also influence work or shift autonomy (Martela & Riekki, 2018; Shanahan et al., 2014). In addition, the response characteristic of acquiescence or rating everything consistently high is a confounding factor and is thus a control factor in the hypothesis testing (Ferrando & Lorenzo-Seva, 2010).

Method

Participants

The study obtained the support of the Junior Police Officers' Association of Hong Kong Police Force to gather complete and valid responses from 793 junior police officers sampled from the members of the Association from 2016 to 2018. Junior police officers necessarily

joining the Association included constables and sergeants who were below the inspector grade. These officers had an average of 37.3 years in age, 12.5 years in education, and 15.5 years in tenure (Table 1). Among the participants, 8.3% are female, 56.9% are elementary constables, 62.4% lived with spouses, 42.2% lived with children, and 7.7% have chronic illnesses. Moreover, 29.6%, 25.1%, 25.1% of them spent time working for station garrison, walking patrol, and vehicle patrol, respectively. The average duration of nightshift work in the past three months is 2.7 weeks (11:00 PM to 7:45 AM). This duration meant an average of 10.3 weeks in non-nightshift work, including daytime, evening, and irregular shifts.

Measurement

Several five-point rating items measured work–family balance in the recent month, work hazards in the past three months, and shift autonomy in the past three months (Table 2). This measurement allowed for the prediction of work-family balance by earlier shiftwork, shift autonomy, and work hazards. These items randomly scattered in the questionnaire to minimize biases due to similar preceding items (Tourangeau et al., 2000). The items generated scores of 0 for the lowest point (none), 25 for the second point (rather little), 50 for the mid-point (average), 75 for the fourth point (rather a lot), and 100 for the highest point (very much). This 0–100 scoring retained the linearity of the five-point scale to facilitate interpretation and comparison (Preston & Colman, 2000). Some items utilized negative phrasing and thus required score reversion.

Work–family balance in the recent month combined five rating items, such as “work and family life being balanced” (Siu et al. 2009). The internal consistency reliability of the five-item measure was 0.807.

Work hazards in the past three months combined four rating items, such as “injury at work” (Turner et al., 2010). The internal consistency reliability of the four-item measure was 0.773.

Shift autonomy in the past three months combined two rating items, such as “choosing your own shift time.” The internal consistency reliability of the two-item measure was 0.801.

Procedure

The study solicited help from the Junior Police Officers’ Association, which enlisted all junior officers, to distribute the questionnaires to the members during their participation in activities in the seven branches of the association. Aiming to survey at least 100 members in each branch, the study eventually collected complete and valid responses from a sample of 793 members. The survey ensured the respondents’ anonymity and the confidentiality of their data solely for statistical analysis. This sample was adequate to test a weak effect ($r = 0.10$) with 95% confidence and 80% statistical power.

The statistical analysis started with confirmatory factor analysis to confirm the three factors of work–family balance, work hazards, and shift autonomy. The analysis constrained every item to load only on one of the three factors to establish convergent, discriminant, and factorial or structural validity. The factors of work–family balance, work hazards, and shift autonomy had five, four, and two items, respectively.

After the confirmation of the factor structure and validity, a series of linear regression analysis predicted work–family balance, work hazards, shift autonomy, and nightshift work. All predictions had background and response characteristics as basic predictors or control

factors. In addition, the prediction of work–family balance in the recent month involved the work hazards and shift autonomy in the past three months as predictors. Furthermore, the interactions between nightshift work and female gender and shift autonomy served as additional predictors. The interactions were the multiplicative products of the standard scores of nightshift work and female gender and shift autonomy, which minimized the multicollinearity in examining the main and interaction effects (Brambor et al., 2006). The regression analysis progressively entered the predictors to differentiate the main effects of the background factors, followed by work factors and additional interaction effects. The prediction of nightshift work aimed to show that nightshift work was hardly predictable.

In addition, regression analysis of work-family balance proceeded with data without and with weighting with non-selectivity into nightshift work. Such nightshift non-selectivity was the residual from regression analysis of nightshift work duration. A lower residual indicated higher selectivity such that the officer's nightshift work duration was more predictable with the officer's background characteristics. The weighting functioned to minimize the self-selection bias in a counterfactual way (Morgan & Winship, 2007). As such, the analysis estimated effects when selectivity into nightshift work was lower than reality.

Results

Based on the raw scores, work–family balance (M = 56.4, see Table 1) and work hazards of Hong Kong police officers (M = 52.8), on average, were at the mid-level of the scale, whereas the shift autonomy was at a low level (M = 27.9). The average balance was not high, but the average hazards were substantial.

The measurement of work–family balance, work hazards, and shift autonomy

manifested factorial validity. The confirmatory factor analysis showed that items converged to identify the three different factors of balance, hazards, and autonomy with substantial loadings (see Table 2). The correlations among the different factors were not strong (r = −.083, 168, and .260). Considering the good fit of the analysis ($L^2(33) = 84.0$, *standardized root-mean-square residual* = .050, *root-mean-square error of approximation* = .044, *comparative fit index* = .976), the convergent, discriminant, and factorial validity were evident. The validity, therefore, warranted the corresponding uses of these factors in the linear regression analysis for hypothesis testing.

Using data not weighted by non-selectivity into nightshift work, linear regression analysis supported the four major hypotheses and the two sub-hypotheses concerning the police officers. This support held due to the control of the background and response characteristics. With data weighted by nightshift non-selectivity, regression analysis also supported the hypotheses, except the sub-hypothesis about the interaction effect of nightshift work and shift autonomy on work-family balance.

Hypothesis obtained support from the significantly negative effect of nightshift work in the past three months on work–family balance in the recent month. This effect was significant before and after controlling work hazards, shift autonomy, and the interactions between nightshift work and female gender and shift autonomy (β = −.098, −.067, −.070, and −.080, respectively, see Table 3). Based on data weighted by nightshift non-selectivity, the effect was also significantly negative and slightly stronger (β = −.108, −.076, −.083, and −.091 respectively, see Table 4))

Hypothesis 1.1 found support from the significantly negative effect of the interaction of

nightshift work in the past three months and female gender on work–family balance in the recent month. The effect of nightshift work was more negative on work–family balance of the female police officer than their male counterparts (β = −.064, see Column 4 in Table 3). The effect held when the analysis controlled the shift autonomy, work hazards, and the background and response characteristics. Based on data weighted by nightshift non-selectivity, the effect was also significant negative (β = −.064, see Column 4 in Table 4)

Hypothesis 2 gathered support from the significantly negative effect of work hazards in the past three months on work–family balance in the recent month. The negative effect was evident due to the control for work autonomy, nightshift work, and background and response characteristics (β = −.198, see Table 3). Furthermore, the negative effect remained significant before and after controlling the interactions with female gender and shift autonomy in the past three months (β = −.197 and −.194, respectively). Based on data weighted by nightshift non-selectivity, the effects of work hazards were also significantly negative and somewhat stronger (β = -.240, -.238, and -.236, see Table 4).

Hypothesis 3 attained support from the significantly positive effect of nightshift work in the past three months on the work hazards in the past three months (β = .104, see Table 5). This effect was plausible because nightshift work resulted from the bureaucratic arrangement rather than that of work hazards. As a significant predictor of work–family balance and the significant outcome of the nightshift work, work hazards were a significant mediator of the negative effect of nightshift work on work–family balance (β = −.021, p = .032). The mediated effect was 21.4% of the total effect of the nightshift work.

Hypothesis 4 got support from the significantly positive effect of shift autonomy in the

past three months on work–family balance in the recent month. The effect remained significant before and after controlling the interactions between nightshift work and gender and shift autonomy (β = .097, .098, and .098, see Table 3). Based on data weighted by nightshift non-selectivity, the effects were also significant and slightly stronger (β = .116, .117, and .120, see Table 4). Moreover, shift autonomy was significantly low when the nightshift work was long (β = .106, see Table 5). As a predictor of work–family balance and restrained by the nightshift work, shift autonomy mediated 1.5% of the total effect of nightshift work on work–family balance. In addition, the effect mediated by shift autonomy was also significant (β = −.010, p = .095).

Hypothesis 4.1 secured support from the significantly positive effect of the interaction between nightshift work and shift autonomy in the past three months on work–family balance in the recent month (β = .067, see Table 3). Based on data weighted by nightshift non-selectivity, the interaction was not significant (β = .061, see Table 4). Overall, shift autonomy hardly mitigated the negative effect of nightshift on work-family balance.

Background characteristics were necessary as control factors because of their significant effects on work–family balance, work hazards, shift autonomy, and nightshift work. Chronic illness negatively affects work–family balance and shift autonomy (see Tables 3 and 5). The elementary constable had lower work–family balance than the other officer. The officer living with the spouse had lower work–family balance, work hazards, and shift autonomy than the officer who lived alone. The older officer experienced higher work hazards (β = .155, see Table 5). Nevertheless, the background characteristics hardly predicted nightshift work, work hazards, and shift autonomy. Only education displayed a significantly negative effect on nightshift work (β = −.100, see Table 5).

Discussion

The results support all hypotheses regarding the main, mediated, and moderated effects of nightshift work on the work–family balance of the police officer. Notably, nightshift work tends to erode work–family balance, with or without adjustment for self-selection into nightshift work. Moreover, the erosion is partly attributable to the mediation by work hazards and low shift autonomy, which are predictive of work–family balance. These findings thus warrant the application of conservation of resources theory to the police institution, even given the institutional constraint. According to institutional logic, the hypothesized effects hold even though the police institution or its selectivity constrains the impacts.

Considering the theory, work–family balance hinges on the conservation of resources drained by nightshift work and the work hazards reduced by the shift autonomy of police officers. Nightshift work is particularly demanding to deplete personal vigor and other resources, possibly because of the violation of the biological circadian rhythm. In addition, the depletion is partly due to the work hazards exposed by nightshift work. Work hazards are detrimental to the person, including the body and other resources (Turner et al., 2010). To conserve resources and prevent or restore resource loss, work autonomy is useful as an effective loss buffer (Park & Searoy, 2012). Shift autonomy, which is a way of work autonomy in this study, buffed the adverse effect of nightshift work on work–family balance. Given that the shift autonomy of female officers with nightshift work was lower than that of male ones, the autonomy partly explained the female disadvantage in work–family balance due to such shiftwork. Female officers have fewer resources to attain autonomy on nightshift work than their male counterparts. This result reflects the gendered nature and female minority status of the police (Chan & Ho, 2013; Duxbury & Halinski, 2018). One possible

explanation of this condition is that female police work is unique, which makes rescheduling the shiftwork hard.

Nightshift work and work hazards are vital in impeding work–family balance of police officers. According to conservation theory, this importance reflects the resource loss from nightshift work and work hazards. Nightshift work as a resource loss has caused stress and sleep problems (Claudia Ma et al., 2015; Taylor et al., 2010). Similarly, work hazards generate stress, behavioral problems, and functional limitation, eroding work quality (Gillen et al., 2002; Requena, 2003). In addition, work demand, stress, and resultant problems, meanwhile impair work–family balance (Haar et al., 2019). This resource loss likely reduces the abilities and efforts required to adjust or maintain work–family balance (Haar et al., 2019; Siu, 2013).

The positive effect of shift autonomy on work–family balance dispels the doubt about the contribution of the autonomy. This doubt suggests that work autonomy is demanding and increases the work and its demand, such as negotiation with the supervisor (Correll et al., 2007; Schieman & Glavin, 2008, 2017). As such, shift autonomy is a resource gain (Brossoit et al., 2020; Lefrancois et al., 2017). This gain can reflect the contribution of work autonomy to work competence, performance, and quality (de Witte et al., 2007; Thibault Landry et al., 2017). Such competence and features are likely to enrich work and lessen work problems, thus improving work–family balance (Siu, 2013). This gain at least tends to be greater than the resource loss in negotiating with the supervision.

However, schedule autonomy only slightly mitigated the detrimental effect of nightshift work on work-family balance, especially under the counterfactual condition of

non-selectivity into nightshift work. This slight mitigation testifies the difficulty and inflexibility in schedule autonomy within the police institution (Lefrancois et al., 2017; Maurya & Agarwal, 2018). The institution imposes institutional norms and roles based on bureaucracy and discipline (Raper et al., 2019; Terpstra & Salet, 2019). These norms and roles would constrain the effectiveness of schedule autonomy. Particularly, nightshift non-selectivity reflects that shift autonomy is futile, and thus its mitigation effect is slight,

Given that resource loss and conservation are essential to work–family balance, the background characteristics responsible for the loss or conservation are likely to affect balance. Chronic illness leads to resource loss, whereas job rank enables access to resources and conservation (Resnick & Wolff 2003; Saksvik-Lehouillier et al., 2012). Job rank also facilitates the access from relatedness, social networking, and social support (Martela & Riekki, 2018). Living with the spouse raised the commitment to the family but drained the resources to maintain work–family balance (Schieman & Glavin, 2008). In conclusion, living with spouse and chronic illness negatively affect balance, whereas job rank has a positive effect. The former factors also significantly and negatively affect shift autonomy, which reflect the draining of work resources. Accordingly, work autonomy depends on work resources, depletable by marriage and chronic illness (Hammond et al., 2015; Osthus, 2007). As mentioned previously, work hazards were higher for older officers than for young ones. This inference reflects the weak resources of the former to prevent work hazards (Siu et al., 2003; Wang et al., 2018). Meanwhile, living with a spouse alleviated work hazards, which reflect spousal support and resource conservation for hazards prevention (Shahrabani et al., 2009).

Limitations of Future Research

The study has several limitations in analyzing the survey data of Hong Kong police officers. This work is a single-site study that inadequately represents all police officers in specific and various places. The Hong Kong police force may be peculiar in applying the British system to the Chinese culture. The survey, which relies on the officers' self-report at a time, is insufficient to ensure the causal order presumed for the analysis. Consequently, the influences based on the analysis are plausible but not veritable by design. These limitations in design, sampling, and measurement urge future research to corroborate the findings of this study. Future research should maximize the representation of police officers in diverse places through diverse sampling. This research enables the analysis of the moderation effects due to the specific area to gauge the generality or specificity of the findings across places. The contextual factors for each place are helpful to elaborate the moderate effects. In addition, future research can enhance the design and measurement by collecting data from multiple informants at multiple time points. The informants can include the officers' supervisors and family members to corroborate and objectively combine work measures and family conditions. The multiple time points will ensure the temporal and causal order among predictors and outcomes. To tap the changes due to the predictors, future research should estimate the net effects of predictors after controlling the previously measured outcome.

Future research can also advance the application and development of conservation theory by introducing some pertinent factors as mediators and/or moderators for the analysis. These factors include the loss and resource conservation relevant to work, family, and the balance of both domains (De Carlo et al., 2019; Peng et al., 2019). Using these factors, future studies can illustrate how nightshift work, work hazards, and shift autonomy affect resource loss and conservation and work–family balance. For instance, fatigue, dysfunction, and medical cost can be resource losses due to nightshift work or work hazards (Kirschenbaum et

al., 2000; Taylor et al., 2019), whereas prevention of fatigue and conservation of vigor can be a contribution of the shift autonomy (Peeters & Rutte, 2005).

Implications

Preventing resource losses and conserving resources can effectively strengthen work–family balance in shift workers, such as police officers. The effectiveness dawns with the present findings, which embody conservation theory with the negative effect of work hazards on the balance, and the positive effects on the balance, including the effect that buffered the adverse effect of nightshift work. To prevent resource loss due to work hazards, providing instruction to aid in the prevention is effective and should further increase (Kirschenbaum et al. 2000). In addition, granting autonomy to the workers can prevent work hazards and thus necessitates promotion (Horsill & McKeena 1999). The worker facing potential hazards should have the autonomy to avoid the hazards. To foster the worker's work autonomy, empowerment, managerial openness, and transformational leadership, considerate, visionary, and inspiring, are helpful steps and should also increase (Hammond et al., 2015; Harley, 1999; Morrison et al., 1999). The worker's resource conservation depends on his/her relevant knowledge, which accrues from the worker's contact with knowledgeable people (Seibert et al., 2001). Therefore, promoting such contact and knowledge in the worker is crucial.

Some police officers need to enhance their work–family balance. These officers include those with chronic illnesses, elementary rank, spouses, or nightshift work. According to conservation theory, these officers should prevent resource losses and promote resource conservation. To prevent or reduce the worker's resource losses due to illness, the worker's workload should reduce and the work autonomy should increase (Bowling et al., 2004;

Richardson et al., 2008). For workers with lower rank, the resource loss due to the workers' low work autonomy, success, and reception of support is substantial (Bowler & Brass 2006; Forrest & Dougherty, 2004; Martela & Riekki, 2018). This case implies the great need to conserve resources by upskilling, providing support, and enhancing the work autonomy of elementary workers. For workers living with spouses, the resource loss due to inadequate organizational support is higher than those that live alone (Yoon & Lim, 1999). The former therefore need additional organizational support to conserve resources. For workers with more nightshift work than others, the resource loss due to threat, stress, sleep problems, and work hazards is substantial (C. Ma et al., 2015; Taylor et al., 2019). Therefore, the measures to address these problems through resource conservation are crucial for these workers. The worker's work stress is severe when the worker has a high workload and inadequate training and work autonomy (Moen et al., 2013; Nahum-Shani et al., 2014; Schieman, 2013). This phenomenon implies the need to reduce the workload and increase the training and work autonomy to relieve the work stress and the resultant resource losses in night shift workers. Similarly, work autonomy has diminished sleep problems (Moen et al., 2011). Raising work or shift autonomy is also helpful to prevent resource losses and conserve resources, particularly in night shift workers. Furthermore, because female night shift police officers had lower shift autonomy and less satisfactory work–family balance than male ones, raising the shift autonomy of the former is necessary to improve the balance.

References

Adkins, C. L., & Premeaux, S. F. (2019). A cybernetic model of work-life balance through time. *Human Resource Management Review, 29,* 100680. doi:10.1016/j.hrmr.2019.01.001

Adorjan, M., & Lee, M. (2017). Public assessments of the police and policing in Hong Kong. *Australian & New Zealand Journal of Criminology, 50,* 510-528. doi:10.1177/0004865816656721

Bakker, A. B., & Oerlemans, W. G. M. (2019). Daily job crafting and momentary work engagement: A self-determination and self-regulation perspective. *Journal of Vocational Behavior, 112,* 417-430. doi:10.1016/j.jvb.2018.12.005

Bal, P. M., Hofmans, J., & Polat, T. (2017). Breaking psychological contracts with the burden of workload: A weekly study of job resources as moderators. *Applied Psychology, 66,* 143-167. doi:10.1111/apps.12079

Benton, R. A. (2015). Social capital and work activity: Autonomy, supervision, and creativity in interpersonal networks. *Research in the Sociology of Work, 24,* 269-293.

Blair-Loy, M., & Wharton, A. S. (2002). Employees' use of work-family policies and the workplace social context. *Social Forces, 80*, 813-845.

Bowler, W. M., & Brass, D. J. (2006). Relational correlates of interpersonal citizenship behavior: A social network perspective. *Journal of Applied Psychology, 91,* 70-82.

Bowling, N. A., Beehr, T. A., Johnson, A. L., Semmer, N. K., Hendricks, E. A., & Webster, H. A. (2004). Explaining potential antecedents of workplace social support: Reciprocity or attractiveness? *Journal of Occupational Health Psychology, 9*, 339-350.

Bozionelos, N., & Wang, L. (2006). The relationship of mentoring and network resources with career success in the Chinese organizational environment. *International Journal of Human Resource Management, 17*(9), 1531-1546.

Brambor, T., Clark, W. R., & Golder, M. (2006). Understanding interaction models: Improving empirical analyses. *Political Analysis, 14,* 63-82.

Brossoit, R. M., Crain, T. L., Hammer, L. B., Lee, S., Bodner, T. E., & Buxton, O. M. (2020). Associations among patient care workers' schedule control, sleep, job satisfaction and turnover intentions. *Stress & health, 36,* 442-456. doi:10.1002/smi.2941

Chan, A. H.-n., & Ho, L. K.-k. (2013). Women police officers in Hong Kong: Femininity and policing in a gendered organization. *Journal of Comparative Asian Development, 12,*

489-515. doi:10.1080/15339114.2013.863565

Chu, C. C. Y., Xie, Y., & Yu, R.-R. (2007). Effects of sibship structure revisited: evidence from intrafamily resource transfer in Taiwan. *Sociology of Education,* 80, 91-113.

Cocchiara, F. K., Kwesiga, E., Bell, M. P., & Baruch, Y. (2010). Influences on perceived career success: Findings from US graduate business degree alumni. *Career Development International, 15,* 39-58.

Correll, S. J., Benard, S., & Paik, I. (2007). Getting a job: Is there a motherhood penalty? *American Journal of Sociology, 112,* 1297-1338.

Costigan, C. L., Cox, M., & Cauce, A. (2003). Work-parenting linkages among dual-earner couples at the transition to parenthood. *Journal of Family Psychology, 17,* 397-408.

Crank, J. P. (2003). Institutional theory of police: A review of the state of the art. *Policing, 26,* 186-207. \d12-6.29

Crawford, E. R., LePine, J. A., & Rich, B. L. (2010). Linking job demands and resources to employee engagement and burnout: A theoretical extension and meta-analytic test. *Journal of Applied Psychology, 85,* 834-848.

De Carlo, A., Girardi, D., Falco, A., Dal Corso, L., & Di Sipio, A. (2019). When does work interfere with teachers' private life? An application of the job demands-resources model. *Frontiers in Psychology, 10,* 1121. doi:10.3389/fpsyg.2019.01121

De Witte, J., Declercq, A., & Hermans, K. (2016). Street-level strategies of child welfare social workers in Flanders: The use of electronic client records in practice. *British Journal of Social Work, 46,* 1249-1265.

Duxbury, L., & Halinski, M. (2018). It's not all about Guns and Gangs: Role Overload as a Source of Stress for Male and Female Police Officers. *Policing & Society, 28,* 930-946.

Fenwick, R., & Tausig, M. (2001). Scheduling Stress. *American behavioral scientist., 44,* 1179-1198. doi:10.1177/00027640121956719

Ferrando, P. J., & Lorenzo-Seva, U. (2010). Acquiescence as a source of bias and model and personal misfit: A theoretical and empirical analysis. *British Journal of Mathematical & Statistical Psychology, 63,* 427-448.

Forret, Monica L., & Dougherty, T. W. (2004). Networking behaviors and career outcomes: Differences for men and women? *Journal of Organizational Behavior, 25,* 419-437.

Franzen, A., & Hangartner, D. (2006). Social Networks and Labour Market Outcomes: The Non-monetary Benefits of Social Capital. *European Sociological Review, 22,* 353-368.

Gerber, M., Hartmann, T., Brand, S., Holsboer-Trachsler, E., & Pühse, U. (2010). The relationship between shift work, perceived stress, sleep and health in Swiss police officers. *Journal of Criminal Justice, 38,* 1167-1175. doi:10.1016/j.jcrimjus.2010.09.005

Gillen, M., Baltz, D., Gassel. M., Rirsch, L., & Vaccaro, D. (2002). Perceived safety climate, job demands, and coworker support among union and nonunion injured construction workers. *Journal of Safety Research, 33,* 33-51.

Glavin, P., & Schieman, S. (2012). Work–family role blurring and work–family conflict. *Work and Occupations, 39,* 71-98. doi:10.1177/0730888411406295

Grebner, S., Elfering, A., Semmer, N. K., Kaiser-Probst, C., & Schlapbach, M.-L. (2004). Stressful situations at work and in private life among young workers: An event sampling approach. *Social Indicators Research, 67,* 11-49.

Greer, C., & Peterson, D. (2013). Balancing Act? Cultural Representations of Work-Family Balance in the News Media. *Sociol Spectrum, 33,* 117-135. doi:10.1080/02732173.2013.732872

Gregory, A., Hofäcker, D., & König, S. (2013). Flexibility and work? Life conflict in times of crisis: a gender perspective. *International Journal of Sociology & Social Policy, 33,* 613-635.

Griffin, J. D., & Sun, I. Y. (2018). Do work-family conflict and resiliency mediate police

stress and burnout? A study of state police officers. *American Journal of Criminal Justice, 43,* 354-370.

Grzywacz, J. G., & Bass, B. L. (2003). Work, family, and mental health: Testing different models of work-family fit. *Journal of Marriage & Family, 65*, 248-262.

Haar, J., Sune, A., Russo, M., & Ollier-Malaterre, A. (2019). A cross-national study on the antecedents of work–life balance from the fit and balance perspective. *Social Indicators Research, 142,* 261-282. doi:10.1007/s11205-018-1875-6

Hammond, M., Cleveland, J. N., O'Neill, J. W., Stawski, R. S., & Jones Tate, A. (2015). Mediators of transformational leadership and the work-family relationship. *Journal of Managerial Psychology, 30,* 454-469. doi:10.1108/jmp-10-2011-0090

Harley, B. (1999). The myth of empowerment: work organisation, hierarchy and employee autonomy in contemporary australian workplaces. *Work, Employment & Society, 13,* 41-66.

Hassan, Z., Dollard, M. F., & Winefield, A. H. (2010). Work-family conflict in eastern vs western countries. *Cross Cultural Management, 17,* 30-49.

Horsill, M. S., & McKeena, F. P. (1999). The effect of perceived control on risk taking. *Journal of Applied Social Psychology, 29*, 377-391.

Hughes, E. L., & Parkes, K. R. (2007). Work hours and well-being: The roles of work-time control and work-family interference. *Work & Stress, 21,* 264-278.

Hui, D. L. H., & Au, R. C. Y. (2014). Police legitimacy and protest policing: A case study of Hong Kong. *Asian Education & Development Studies, 3,* 223-234.

Huynh, J.-Y., Metzer, J. C., & Winefield, A. H. (2012). Engaged or connected? A perspective of the motivational pathway of the job demands-resources model in volunteers working for nonprofit organizations. *Voluntas, 23,* 870-898.

Jacobsen, D. I., & Fjeldbraaten, E. M. (2018). Shift work and sickness absence-the mediating

roles of work-home conflict and perceived health. *Human Resource Management, 57,* 1145-1157. doi:10.1002/hrm.21894

Jiao, A. Y. (2010). Controlling corruption and misconduct: A comparative examination of police practices in Hong Kong and New York. *Asian Criminology, 5,* 27-44.

Jiao, A. Y., Lau, R. W. K., & Lui, P. (2005). An Institutional Analysis of Organizational Change. *International Criminal Justice Review, 15,* 38-57. doi:10.1177/1057567705275711

Johari, J., Yean Tan, F., & Tjik Zulkarnain, Z. I. (2018). Autonomy, workload, work-life balance and job performance among teachers. *International Journal of Educational Management, 32,* 107-120. doi:10.1108/ijem-10-2016-0226

Kim, H., & Stoner, M. (2008). Burnout and turnover intention among social workers: Effects of role stress, job autonomy and social support. *Administration in Social Work, 32*(3), 5-25.

Kirschenbaum, A., Oigenblick, L., & Goldberg, A. I. (2000). Well being, work environment and work accidents. *Social Science & Medicine, 50*, 631-639.

Landolfi, A., Barattucci, M., De Rosa, A., & Lo Presti, A. (2021). The Association of Job and Family Resources and Demands with Life Satisfaction through Work–Family Balance: A Longitudinal Study among Italian Schoolteachers during the Covid-19 Pandemic. *Behavioral Sciences, 11,* 136. \97-95

Lefrancois, M., Messing, K., & Saint-Charles, J. (2017). Time Control, Job Execution and Information Access: Work/Family Strategies in the Context of Low-Wage Work and 24/7 Schedules. *Community, Work & Family, 20,* 600-22.

Li, J. C., Cheung, C. K., & Sun, I. Y. (2019). The impact of job and family factors on work stress and engagement among Hong Kong police officers. *Policing, 42,* 284-300.

Ma, C. C., Andrew, M. E., Fekedulegn, D., Gu, J. K., Hartley, T. A., Charles, L. E., Violanti, J. M., & Burchfiel, C. M. (2015). Shift work and occupational stress in police officers.

Safety & Health at Work, 6, 25-29. doi:10.1016/j.shaw.2014.10.001

Man, D. C., & Lam, S. S. K. (2003). The effects of job complexity and autonomy on cohesiveness in collectivistic and individualistic work groups: A cross-cultural analysis. *Journal of Organizational Behavior, 24,* 979-994.

Marenin, O. (2016). Cheapening death. *Police Quarterly, 19,* 461-487. doi:10.1177/1098611116652983

Martela, F., & Riekki, T. J. J. (2018). Autonomy, competence, relatedness, and beneficence: A multicultural comparison of the four pathways to meaningful work. *Frontiers in Psychology, 9,* 1157. doi:10.3389/fpsyg.2018.01157

Maurya, M. K., & Agarwal, M. (2018). Relationship between motivation to lead, mental health status, and job satisfaction of male and female civil police constables. *Journal of Police & Criminal Psychology, 33,* 9-20. doi:10.1007/s11896-017-9230-4

Michael, J. H., Guo, Z. G., Wiedenbeck, J. K., & Ray, C. D. (2006). Production supervisor impacts on individuals¡¯ safety outcomes: An investigation of leader-member exchange and safety communication. *Journal of Safety Research, 37,* 469-477.

Mills, M., & Täht, K. (2010). Nonstandard work schedules and partnership quality: Quantitative and qualitative findings. *Journal of Marriage & the Family, 72,* 860-875. doi:10.1111/j.1741-3737.2010.00735.x

Moen, P., Kelly, E. L., & Lam, J. (2013). Healthy work revisited: Do changes in time strain predict well-being? *Journal of Occupational Health Psychology, 18,* 157-172. doi:10.1037/a0031804

Moen, P., Kelly, E. L., Tranby, E., & Huang, Q. (2011). Changing work, changing health. *Journal of Health & Social Behavior, 52,* 404-429. doi:10.1177/0022146511418979

Morgan, S. L., & Winship, C. (2007). *Counterfactuals and causal inference: Methods and principles for social research*. Cambridge, UK: Cambridge University Press.

Morrison, E. W., & Phelps, C. C. (1999). Taking charge at work: Extrarole efforts to institute workplace change. *Academy of Management Journal, 42*, 403-419.

Nahum-Shani, I., Henderson, M. M., Lim, S., & Vinokur, A. D. (2014). Supervisor support does supervisor support buffer or exacerbate the adverse effects of supervisor undermining? *Journal of Applied Psychology, 99,* 484-503.

Oberlechner, T., & Nimgade, A. (2005). Work stress and performance among financial traders. *Stress & Health, 21,* 285-293. doi:10.1002/smi.1063

Osthus, S. (2007). For better or worse? Workplace changes and the health and well-being of Norwegian workers. *Work, Employment & Society, 21*(4), 731-750.

Park, R., & Searcy, D. (2012). Job autonomy as a predictor of mental well-being: The moderating role of quality-competitive environment. *Journal of Business & Psychology,* 27, 305-316. doi:10.1007/s10869-011-9244-3

Peeters, M. A. G., & Rutte, C. G. (2005). Time management behavior as in moderation for the job demand-control interaction. *Journal of Occupational Health Psychology, 10,* 64-75.

Peng, Y., Zhang, W., Xu, X., Matthews, R., & Jex, S. (2019). When do work stressors lead to innovative performance? An examination of the moderating effects of learning goal orientation and job autonomy. *International Journal of Stress Management, 26,* 250-260. doi:10.1037/str0000109

Perrucci, R., MacDermid, S., King, E., Tang, C.-Y., Brimeyer, T., Ramadoss, K., Kiser, S. J., & Swanberg, J. (2007). The significance of shift work: Current status and future directions. *Journal of Family & Economic Issues, 28,* 600-617. doi:10.1007/s10834-007-9078-3

Pisarski, A., Bohle, P., & Callan, V. J. (2002). Extended shifts in ambulance work: Influences on health. *Stress & Health, 18,* 119-126.

Preston, C. C., & Colman, A. M. (2000). Optimal number of response categories in rating scales: reliability, validity, discriminating power, and respondent preferences. *Acta Psychologia*, *14,* 1-15. Doi:10.1016/S0001-6918(99)00050-5

Qureshi, H., Lambert, E. G., & Frank, J. (2019). When domains spill over: The relationships of work–family conflict with indian police affective and continuance commitment. *International journal of Offender Therapy & Comparative Criminology, 63,* 2501-2525. doi:10.1177/0306624x19846347

Raper, M. J., Brough, P., & Biggs, A. (2019). Evidence for the impact of organisational resources versus job characteristics in assessments of occupational stress over time. *Applied Psychology, 69,* 715-740. doi:10.1111/apps.12201

Requena, F. (2003). Social capital, satisfaction and quality of life in the workplace. *Social Indicators Research, 61*, 331-340.

Richardson, H. A., Yang, J., Vandenberg, R. J., DeJoy, D. M., & Wilson, M. G. (2008). Perceived organizational support's role in stressor-strain relationships. *Journal of Managerial Psychology, 23,* 789-810.

Saksvik-Lehouillier, I., Bjorvatn, B., Hetland, H., Sandal, G. M., Moen, B. E., Magerøy, N., Harvey, A., Costa, G., & Pallesen, S. (2012). Personality factors predicting changes in shift work tolerance: A longitudinal study among nurses working rotating shifts. *Work & Stress, 26,* 143-160. doi:10.1080/02678373.2012.686344

Savickas, M. L. (2002). Carer construction: A developmental theory of vocational behavior. In D. Brown (Ed.), *Career choice and development* (pp. 149-205). San Francisco, CA: Jossey-Bass.

Schieman, S. (2013). Job-related resources and the pressures of working life. *Social Science Research, 42,* 271-282. doi:10.1016/j.ssresearch.2012.10.003

Schieman, S., & Glavin, P. (2008). Trouble at the border? Gender, flexibility at work, and the

work-home interface. *Social Problems, 55,* 590-611. doi:10.1525/sp.2008.55.4.590

Schieman, S., & Glavin, P. (2017). Ironic flexibility: When normative role blurring undermines the benefits of schedule control. *Sociological Quarterly, 58,* 51-71. doi:10.1080/00380253.2016.1246905

Seibert, S. E., Kraimer, M. L., Liden, R. C. (2001). A social capital theory of career success. *Academy of Management Journal, 44*(2), 219-237.

Senjo, S. R. (2011). Dangerous fatigue conditions: A study of police work and law enforcement administration. *Police Practice & Research, 12,* 235-252. doi:10.1080/15614263.2010.497659

Shahrabani, S., Benzion, U., & Din, G. Y. (2009). Factors affecting nurses' decision to get the flu vaccine. *European Journal of Health Economics, 10*, 227-231.

Shane, J. M. (2013). Daily work experiences and police performance. *Police practice & Research, 14,* 17-34. doi:10.1080/15614263.2011.596717

Shih, S.-P., Jiang, J. J., Klein, G., & Wang, E. (2011). Learning demand and job autonomy of IT personnel: Impact on turnover intention. *Computers in Human Behavior, 27,* 2301-2307. doi:10.1016/j.chb.2011.07.009

Siu, O. L. (2003). Job stress and job performance among employees in Hong Kong: The role of chinese work values and organizational commitment. *International Journal of Psychology, 38,* 337-347.

Siu, O. L. (2013). Psychological capital, work well-being, and work-life balance among Chinese employees: A cross-lagged analysis. *Journal of Personnel Psychology, 12,* 170-181.

Siu, O. L., Cheung, F. Y. L., & Lui, S. (2015). Liking positive emotions to work well-being and turnover intention among Hong Kong Police officers: The role of psychological capital. *Journal of Happiness Studies, 16,* 367-380.

Siu, O. L., Hui, C. H., Phillips, D. R., Lin, L., Wong, T. W., & Shi, K. (2009). A study of resiliency among Chinese health care workers: Capacity to cope with workplace stress. *Journal of Research in Personality, 43,* 770-776.

Siu, O. L., Phillips, D. R., & Leung, T. W. (2003). Age differences in safety studies and safety performance in Hong Kong construction workers. *Journal of Safety Research, 34,* 199-205.

Steinberg, M. W. (2003). Capitalist development, the labor process, and the law. *American Journal of Sociology, 109,* 445-495.

Taylor, Y., Merat, N., & Jamson, S. (2019). The effects of fatigue on cognitive performance in police officers and staff during a forward rotating shift pattern. *Safety & Health at Work, 10,* 67-74. doi:10.1016/j.shaw.2018.08.003

Terpstra, J., & Salet, R. (2019). The contested community police officer: An ongoing conflict between different institutional logics. *International Journal of Police Science & Management, 21,* 244-253. doi:10.1177/1461355719889465

Thibault Landry, A., Gagné, M., Forest, J., Guerrero, S., Séguin, M., & Papachristopoulos, K. (2017). The relation between financial incentives, motivation, and performance: An integrative SDT-based investigation. *Journal of Personnel Psychology, 16(2),* 1-76.

Tourangeau, R., Rips, L. J., & Rasinski, K. (2000). *The psychology of survey response. Cambridge*: Cambridge University Press.

Tuttle, R., & Garr, M. (2012). Shift work and work to family fit: Does schedule control matter? *Journal of Family & Economic Issues, 33,* 261-271. doi:10.1007/s10834-012-9283-6

Vila, B., Morrison, G. B., & Kenney, D. J. (2002). Improving shift schedule and work-hour policies and practices to increase police officer performance, health, and safety. *Police Quarterly, 5,* 4-24. doi:10.1177/109861102129197995

Wang, Y., Liu, J., & Zhu, Y. (2018). How does humble leadership promote follower creativity? The roles of psychological capital and growth need strength. *Leadership & Organization Development Journal, 39,* 507-521. doi:10.1108/lodj-03-2017-0069

Wheatley, D. (2017). Autonomy in paid work and employee subjective well-being. *Work & Occupations, 44,* 296-328. doi:10.1177/0730888417697232

Williams, J. C., Berdahl, J. L., & Vandello, J. A. (2016). Beyond work-life integration. *Annual Review of Psychology, 67,* 515-539. doi:10.1146/annurev-psych-122414-033710

Wright, T. A., & Hobfoll, S. E. (2004). Commitment, psychological well-being and job performance: An examination of conservation of resources (COR) theory and job burnout. *Journal of Business & Management, 9,* 389-406.

Yoon, J-k., & Lim, J-c. (1999). Organizational support in the workplace: The case of Korean hospital employees. *Human Relations, 52*(7), 923-945.

Table 1: Means and standard deviations

Variable	Scoring	*M*	*SD*
Work-family balance, recent month	0-100	56.4	17.5
Work hazards, recent 3 months	0-100	52.8	17.7
Shift autonomy, recent 3 months	0-100	27.9	22.8
Tenure	years	15.5	1.7
Chronic illness	0, 100	7.7	27.7
Elementary constable	0, 100	56.9	49.6
Senior constable	0, 100	24.2	42,8
Sergeant	0, 100	15.8	36.5
Commander	0, 100	3.2	17.7
Education	years	12.5	1.9
Body mass	kg/cm^2	23.3	3.1
Living with the spouse	0, 100	62.4	48.5
Living with children	0, 100	42.2	49.4
Living with a domestic worker	0, 100	9.2	28.9
Living with frail persons	0, 100	1.8	13.2
Age	years	37.3	9.0
Female	0, 100	8.3	27.7
Acquiescence	0-100	44.5	7.2
Nightshift work, recent 3 months	weeks	2.7	1.9
Station garrison, recent 3 months	%	29.6	38.3
Vehicle patrol, recent 3 months	%	23.9	29.6
Walking patrol, recent 3 months	%	25.1	29.3

Variable	Scoring	*M*	*SD*
Special duty, recent 3 months	%	9.5	19.5
Clerical work, recent 3 months	%	13.3	24.5

Note. The mean of "0, 100" scoring represented the percentage.

Table 2: Standardized factor loadings from the 3-factor confirmatory factor model

Factor/Indicator	Work Hazards	Shift autonomy	Work-family balance
Hazards at work	.706		
Being beaten and scolded at work	.606		
(few) Safety facilities at work	.330		
Injury at work	.843		
Choosing your own shift time		.661	
Ability to change shift time by yourself		.724	
Work and family life being balanced			.774
Cooperation between work and family life			.835
Being able to balance work and family life			.804
(few) Conflicts between work and family life			.368
(little) Interference between work and family life			.376
Reliability	.773	.801	.807

Table 3: Standardized regression coefficients on work-family balance

Predictor	(1)	(2)	(3)	(4)	(5)
Tenure	.028	.016	-.010	-.010	-.015
Chronic illness	-.139***	-.138***	-.134***	-.131**	-.134***
Senior constable vs. elementary constable	.129*	.125*	.116*	.119*	.118*
Sergeant vs. elementary constable	.152**	.151**	.159**	.158**	.157**
Commander vss. Elementary constable	.086*	.091*	.090*	.090*	.092*
Education	-.003	-.012	-.010	-.007	-.003
Body mass	-.022	-.031	-.031	-.032	-.032
Living with the spouse vs. living alone	-.104*	-.098*	-.108*	-.109*	-.102*
Living with children vs. living alone	-.024	-.028	-.030	-.030	-.027
Living with a domestic worker vs. living alone	.049	.045	.054	.054	.051
Living with frail persons vs. living alone	-.073	-.072	-.062	-.067	-.065
Age	-.090	-.087	-.051	-.051	-.049
Female	-.041	-.062	-.054	-.059	-.058
Acquiescence	-.060	-.061	-.045	-.046	-.046
Night shift		-.098*	-.067#	-.070#	-.080*

Predictor	(1)	(2)	(3)	(4)	(5)
Station garrison		.044	.064	.060	.067
Vehicle patrol		.147	.167*	.163*	.168*
Walking patrol		.027	.055	.048	.063
Special duty		.018	.029	.028	.037
Clerical work		.123	.123	.117	.122
Work hazards			-.198***	-.197***	-.194***
Shift autonomy			.097*	.098*	.098*
Night shift × Female				-.064#	-.056
Night shift × Shift autonomy					.067#
R^2	.054	.079	.120	.124	.129

Note. (1) background predictors only; (2) predictors in past three months added.

# $p < .1$. * $p < .05$. ** $p < .01$. *** $p < .001$.

Table 4: Standardized regression coefficients on work-family balance, weighted by nightshift non-selectivity

Predictor	(1)	(2)	(3)	(4)	(5)
Tenure	-.008	-.014	-.033	-.033	-.033
Chronic illness	-.137***	-.139***	-.136***	-.130**	-.135***
Senior constable vs. elementary constable	.083	.078	.079	.083	.083
Sergeant vs. elementary constable	.122*	.121*	.130**	.130**	.128**
Commander vss. Elementary constable	.071	.071	.075	.076	.083
Education	-.024	-.036	-.038	-.032	-.025
Body mass	-.053	-.055	-.045	-.043	-.046
Living with the spouse vs. living alone	-.064	-.062	-.074	-.075	-.068
Living with children vs. living alone	-.028	-.033	-.040	-.039	-.039
Living with a domestic worker vs. living alone	.073	.067	.078*	.078	.077*
Living with frail persons vs. living alone	-.026	-.025	-.011	-.017	-.015
Age	.001	-.003	.010	.009	.009
Female	-.036	-.055	-.044	-.048	-.047
Acquiescence	-.040	-.038	-.020	-.022	-.021

Predictor	(1)	(2)	(3)	(4)	(5)
Night shift		-.108**	-.076#	-.083*	-.091*
Station garrison		.041	.064	.057	.078
Vehicle patrol		.132	.152*	.143*	.157*
Walking patrol		.035	.078	.068	.093
Special duty		.029	.040	.036	.053
Clerical work		.142*	.134*	.123*	.134*
Work hazards			-.240***	-.238***	-.236***
Shift autonomy			.116**	.117**	.120**
Night shift × Female				-.064#	-.057
Night shift × Shift autonomy					.061
R^2	.041	.066	.128	.132	.135

Note. (1) background predictors only; (2) predictors in past three months added.

# $p < .1$. * $p < .05$. ** $p < .01$. *** $p < .001$.

Table 5: Standardized regression coefficients on work hazards and shift autonomy

Predictor	Work hazards		Shift autonomy		Night shift
	(1)	(2)	(1)	(2)	
Tenure	-.111	-.109	.059	.044	-.081
Chronic illness	.010	-.009	-.074*	-.064	.011
Senior constable vs. elementary constable	-.035	-.052	-.022	-.016	.046
Sergeant vs. elementary constable	.045	.045	.005	.008	.004
Commander vss. Elementary constable	.005	.001	.006	.013	.064
Education	-.024	-.007	-.017	-.032	-.100*
Body mass	.003	.006	.024	.017	-.034
Living with the spouse vs. living alone	-.091*	-.091*	-.085*	-.080	.008
Living with children vs. living alone	-.026	-.031	-.043	-.041	.040
Living with a domestic worker vs. living alone	.047	.049	.014	.011	-.011
Living with frail persons vs. living alone	.063	.062	.023	.027	.033
Age	.155*	.177*	.008	-.007	-.066
Female	.020	.030	-.005	-.021	-.033
Acquiescence	.250***	.249***	.339***	.337***	-.029
Night shift		.104**		-.106**	

Predictor	Work hazards (1)	Work hazards (2)	Shift autonomy (1)	Shift autonomy (2)	Night shift
Station garrison		.120		.046	
Vehicle patrol		.137		.084	
Walking patrol		.136		-.014	
Special duty		.087		.056	
Clerical work		.034		.068	
R^2	.090	.114	.132	.152	,021

Note. (1) background predictors only; (2) predictors in past three months added.

* $p < .05$. ** $p < .01$. *** $p < .001$.