



On Guard: The Costs of Work-Related Hypervigilance in the Correctional Setting

Charlotte Fritz¹  · Leslie B. Hammer^{1,2} ·
Frankie Guros¹ · Brittanie R. Shepherd¹ ·
David Meier¹

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Abstract Employees in security-related occupations are expected to be alert and on guard at work in order to stay safe and complete their work tasks (e.g., police, military, corrections). This study introduces the concept of work-related hypervigilance (WHV) as an experience at work that sustains cognitive and physiological activation among employees and is associated with strain outcomes and lower well-being. It was hypothesized that WHV would be associated with greater strain outcomes (i.e., exhaustion and physical health symptoms), work-to-family conflict, and impaired sleep. Data were collected from 1317 security staff working in 14 state correctional facilities in the Northwestern United States. Results indicated that WHV was positively related to exhaustion, physical health symptoms, and work-to-family conflict. Further, WHV was negatively related to sleep quantity and quality. Overall, the results support the proposition

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✉ Charlotte Fritz
fritzc@pdx.edu

✉ David Meier
david.meier@freechoicelearning.org

Leslie B. Hammer
hammerl@pdx.edu

Frankie Guros
fjguros@gmail.com

Brittanie R. Shepherd
bshe2@pdx.edu

¹ Psychology Department, Portland State University, P.O. Box 751, Portland, OR 97207-0751, USA

² Oregon Institute of Occupational Health Sciences, Oregon Health and Science University, 3181 SW Sam Jackson Park Road, Portland, OR 97239, USA

that WHV is an important employee experience that warrants further examination. Practical and theoretical implications and future research directions are discussed.

Keywords Work-related hypervigilance · Correctional officers · Work-to-family conflict · Sleep · Strain

Introduction

In safety sensitive jobs – such as police or corrections, being alert and on guard to ensure one's safety and the safety of those around is crucial. Momentary lapses in alertness can result in injury or even death in jobs that require constant scanning of the environment for potential danger. Therefore, it is important for work organizations to understand the impact that *work-related hypervigilance* (WHV) – i.e., an extreme and continuous sense of alertness due to a perceived threat either in the immediate work environment or as a result of work-related situations outside of work – can have on employees. Accordingly, this study focuses on relationships between WHV and employee outcomes (i.e., exhaustion, physical health symptoms, work-to-family conflict, and sleep). Although elevated levels of alertness may be of utmost importance for decision-making around safety and productivity (Johnston et al. 1997), being on guard for extended periods of time may take a toll on employee well-being and functioning. Within correctional facilities, constant alertness is crucial to the performance of job tasks. If alertness lapses, an officer may not be able to respond quickly to potentially life-threatening situations that arise, such as an attack from an inmate. Research indicates that among correctional officers (COs) life expectancies are 12 to 15 years shorter than in the general population (Parker 2011), elevated rates of suicide (Stack and Tsoudis 1997), and higher risk of divorce (McCoy and Aamodt 2010), pointing to relationships between such extreme work demands and employee health and well-being. Thus, our study will help to understand the potential impact of WHV on employees, correctional officers in particular, as well as lay the groundwork for future interventions aimed at reducing employee strain and improving their health and well-being.

This study contributes to past organizational research in several ways. First, it establishes the concept of WHV more firmly in the occupational health literature. Although initial research has pointed to the potential adverse effects of working in security-related occupations (Schaufeli and Peeters 2000), WHV has not been examined in depth yet. In our study we link the experience of WHV to the Cognitive Activation Theory of Stress (CATS; Meurs and Perrewé 2011; Ursin and Eriksen 2010). CATS proposes that perceived threats in the environment create arousal that helps deal with the threat and at the same time can lead to strain. By conceptualizing WHV as an employee experience in security-related occupations we are setting the stage for more extensive research regarding the potential predictors and outcomes of WHV. Second, this study introduces a survey measure to assess WHV. By not only conceptualizing but also providing a specific way to assess WHV, we create opportunities for future research to more deeply examine WHV in a variety of dangerous occupations. Furthermore, our goal was to provide a short measure of the construct to create opportunities for assessment in a variety of settings and research designs. Finally, our study examines the relationships between WHV and employee outcomes that have been found to be important players in employee well-being, health, and performance capacity (Demerouti et al. 2003; Sonnentag and Fritz 2007; Spector and

Jex 1998). By examining relationships with WHV our study points to the potential role of WHV in employee strain and well-being, thereby delineating potential consequences for work organizations.

Work-Related Hypervigilance

In this study we provide a conceptualization of WHV that allows the assessment of the construct in all employees (not just those having experienced job-related trauma) in a variety of safety-related occupations. Therefore, we conceptualize WHV as an extreme attentiveness to and assessment of the environment as potentially dangerous. The danger consists of potential harm through others that is ongoing. As such, WHV is not a reaction to particular traumatic experiences in the past or a symptom co-occurring with clinical disorders (e.g., social phobia; Bogels and Mansell 2004; or posttraumatic stress disorder; Diamond et al. 2013). Rather, WHV arises in response to certain job characteristics that require one to be alert and on guard and can occur in a variety of safety-related occupations. In addition, we propose that the actual nature of the stimulus or situation (neutral, ambiguous, or negative) matters less than the subjective individual experience. This elevated attentiveness and focus on the environment then creates physiological activation (Gilmartin 1986). Similarly, Kimble et al. (2013) conceptualized hypervigilance as a cognitive, physiological, and behavioral pattern of responses to neutral or ambiguous stimuli in which an individual's capacity to detect and react to potential threats is enhanced. We consider it important to point out that our conceptualization of WHV does not include any judgment regarding the objectivity of the experience. Thus, the experience in and of itself matters for employee and organizational outcomes, rather than the absolute level of danger. This assumption is in line with research relating to fairness perceptions and employee reactions, pointing to the importance of individual perceptions (Greenberg 1987). Thus, we suggest that it is the perception of potential danger that creates the activation, which then translates into employee outcomes such as increased strain and WFC, as well as impaired sleep. We further suggest that the arousal and activation associated with hypervigilance does not necessarily end once the employee leaves the workplace physically (leaving the workspace at the end of a work shift) or mentally (no longer thinking about the dangerous situation and one's reaction to it). Rather, this activation may continue even after the potentially dangerous situation is no longer present. For example, a correctional officer may be hypervigilant even after leaving the workplace at the end of a work shift. This level of hypervigilance may be due to an actual threat (e.g., the potential of running into a former disagreeable inmate at a grocery store), prolonged activation (e.g., elevated stress hormone levels), or lack of mental disengagement from work (e.g., rumination about potential danger while at home).

We propose that WHV refers to alertness as conceptualized in the Cognitive Activation Theory of Stress (CATS). According to CATS, when challenges are expected, brain activation increases, producing arousal and wakefulness (Ursin and Eriksen 2004). When employees are hypervigilant, they are primed to expect and detect challenges or threats within the environment. In jobs that have constant potential threats, this activation is sustained. We propose that this activation is then linked to increased work-related strain and can also spill over into the nonwork domain, contributing to WFC, sleep, and physical health problems. Accordingly, CATS suggests that it is the sustained activation that leads to eventual somatic illness; thus, WHV as an ongoing workplace phenomena may be

especially detrimental for employees. Similarly, prolonged activation can produce a state in which our adaptive systems become overwhelmed and begin to perform poorly (McEwen 1998). As a result, detriments in cognitive and physical functioning (Seeman et al. 1997) as well as increased stress and chronic burnout symptoms (Juster et al. 2011) may occur. Thus, we assume that WHV constitutes a sustained demand that, over time (and with limited opportunity to recover between work shifts), impairs employee well-being by increasing strain outcomes. Furthermore, the arousal and associated consequences associated with WHV may impact the nonwork domain, becoming apparent in employee experiences and behaviors outside of work. Therefore, this study will examine the relationships of WHV with work-family conflict and sleep.

One core component of WHV is the perception of danger or potential threat to one's own safety or the safety of others (e.g., coworkers or inmates). Although WHV is closely linked to perceptions of danger, our conceptualization further includes constant alertness, which may persist even after the acute threat to safety is no longer present. Persistent alertness and assessment of potential danger has also been described as a symptom of post-traumatic stress disorder (PTSD; e.g., Meltzer-Brody et al. 1999; Schell et al. 2004). Focusing on the work context, Allen and Ortlepp (2000) describe job induced post-traumatic stress as symptoms resulting from ongoing traumatic experiences at work that do not fully meet the diagnostic criteria for PTSD. Our conceptualization of WHV is work specific, focusing especially on being alert due to perceptions of danger stemming from the work environment.

Work-Related Hypervigilance in the Correctional Setting

Danger is a natural part of the prison environment and physical danger is a constant threat for COs. For example, COs may be assaulted or taken hostage by an inmate, may have to intervene during a fight between inmates or between inmates and personnel, may have to physically constrain an inmate, or may observe violence at their workplace (Schaufeli and Peeters 2000). Therefore, two core job responsibilities of COs are to control the behavior of the inmates and to prevent violence from occurring, both of which require a constant level of alertness. Overcrowding of prisons and understaffing may further increase perceptions of danger and the threat of violence (Martin et al. 2012). Thus, while being on guard and prepared to immediately respond to safety threats is functional for officers and may save their lives, this additional work demand adds to work stress (Cullen et al. 1985). Accordingly, correctional personnel frequently report feeling unsafe and exhausted (Schaufeli and Peeters 2000). They further report higher levels of depressive and PTSD-like symptoms (Obidoo et al. 2011). Compared to the general population, COs are more likely to be overweight and obese with higher percentages of body fat and higher than average blood pressure (Morse et al. 2011). These lifestyle outcomes combined put officers at risk for metabolic syndrome, greatly increasing their risk of coronary heart disease, diabetes, and stroke. As indicated earlier, correctional officers have been found to have a shorter life span (Parker 2011), elevated rates of suicide (Stack and Tsoudis 1997), and higher risk of divorce (McCoy and Aamodt 2010) than the general population. Despite these observations, empirical studies examining the potential stress-related effects on well-being among COs are still scarce. Thus, this study focuses on WHV as potential antecedent of employee outcomes in corrections to better understand the health-impacting demands of this occupational group.

Work-Related Hypervigilance and Employee Outcomes

In line with CATS we propose that high levels of WHV are associated with sustained activation and accumulated demands that become apparent in increased employee strain. Although arousal and activation are necessary in order to effectively respond to challenges in the environment, activation should cease once the source of the arousal is eliminated. In inherently dangerous occupations, the alarm response may be more or less constant and it is this sustained activation that can lead to strain. One commonly studied strain reaction is exhaustion, which refers to feeling emotionally drained, worn out, and weary after work (Demerouti et al. 2003). Past research indicates that job demands are strongly related to employee exhaustion (Demerouti et al. 2001). In the case of WHV, remaining alert is demanding and as these demands accumulate exhaustion develops. Thus, we propose that high levels of experienced WHV are associated with higher employee exhaustion.

- **Hypothesis 1:** WHV will be positively associated with employee exhaustion.

We further propose that WHV will be associated with higher levels of physical health symptoms of job stress, another commonly studied employee strain reaction. Such symptoms include headaches, digestive problems, or fatigue (Spector and Jex 1998). Specifically, WHV not only refers to a state of mental awareness (associated with increased perception and brain activity, particularly in the pre-frontal cortex, which is responsible for decision-making), but also includes physiological arousal associated with the perception of threat and the readiness to act. More specifically, this state of arousal can go along with an increase in stress hormones (e.g., cortisol) and muscle tension. This physiological arousal, especially when sustained over a longer period of time, can trigger stress-related physical symptoms. In the context of CATS, when employees are alert and on the lookout for potential threats, this is an adaptive response to potential danger within the environment. However, when this response is prolonged, detriments to physical health can occur (Ursin and Eriksen 2004). Accordingly, strain can become apparent in a variety of physical symptoms (Ganster and Rosen 2013; McEwen 1998). Indeed, past research on perseverative cognition suggests that prolonged activation contributes to somatic disease through impacts on the cardiovascular, immune, endocrine, and neurovisceral systems (Brosschot et al. 2006). Thus, we propose that WHV will be linked to increased physical health symptoms.

- **Hypothesis 2:** WHV will be positively associated with physical health symptoms.

In the context of CO WHV, the elevated levels of alertness may not fully decrease or disappear once COs leave the workplace. In line with CATS, this activation may continue due to a variety of reasons, such as sustained physiological activation (e.g., through elevated levels of stress hormones), continued perceptions of danger (e.g., due to the possibility of meeting a former inmate outside the correctional facility), or rumination (e.g., resulting from continuous thinking about a safety-related incident or issue). All these experiences may negatively impact engagement in employee roles and activities outside of work. As a result, employees will report experiencing more work-to-family conflict (WFC), i.e., that job-related demands interfere with their nonwork lives. Specifically, past

research has defined WFC as an inter-role conflict between one's work and family roles (Netemeyer et al. 1996). Accordingly, research indicates that safety concerns are associated with increased work-family conflict among correctional officers (Lambert and Hogan 2006; Obidoa et al. 2011). In the context of our study, increased levels of WHV can create activation that takes time and energy away from the family domain and that makes appropriate involvement in the family role difficult for COs. Thus, we propose that WHV is associated with higher levels of work-to-family conflict.

- **Hypothesis 3:** WHV will be positively associated with work-to-family conflict.

We further propose that WHV can be linked to employee sleep. Specifically, the continued sense of elevated awareness as part of WHV goes along with increased (cognitive, affective, or physiological) arousal, which interferes with employee sleep. Reduction in sleep hours and impairments in sleep quality interfere with necessary restorative processes (Barnes et al. 2012). In this study we examine the links between WHV and sleep quantity as well as sleep quality. Research indicates that poor sleep is associated with a variety of aspects of human functioning (Siegel 2005), such as impaired decision-making (Harrison and Horne 2000), cognitive processing (Lim and Dinges 2010), and general performance (Pilcher and Huffcutt 1996). Poor sleep is further linked to vulnerability to distractions (Franzen et al. 2008), lower levels of alertness (Buysse et al. 2007), and lower levels of detection of threats (Basner et al. 2008), all of which may impact employee safety in corrections. Therefore, it is crucial to understand how the experience of WHV is linked to sleep (Barnes et al. 2012).

- **Hypothesis 4a:** WHV will be negatively associated with sleep quantity.
- **Hypothesis 4b:** WHV will be negatively associated with sleep quality.

Method

Sample and Procedure

Participants were security staff (i.e., the rank of correctional officer, corporal, sergeant, lieutenant, or captain) from 14 correctional facilities in the Northwestern United States. For each institution, an email invitation to take the survey was sent to all security staff by 1) the superintendent of the institution, 2) a labor representative, and 3) a member of the state's department of corrections research department. The emails contained directions for taking the survey and a link to the survey. Survey responses were sent directly to the researchers. The sample consisted of 1317 COs (54% response rate). A majority (81%) of the participants were male. The average age was 44 years ($SD=9.95$), the average tenure working in corrections was 12.04 years ($SD=7.13$), and participants reported working an average of 42.79 h per week ($SD=6.32$).

Measures

WHV When developing the WHV scale, our goal was to derive a short scale that is easy to use in field settings. Based on theoretical assumptions and past research, site

visits at four correctional institutions, and interviews with COs of varying rank and tenure, we generated a pool of 29 items. Six subject matter experts (DOC stakeholders and researchers as well as several Ph.D.'s and Ph.D. candidates) examined the 29 items and suggested eliminating those items that created too much redundancy, were unclear, did not correspond to our definition of WHV, or otherwise did not accurately assess the construct. The reduced pool contained nine items total, one of which was reverse-coded. In line with DeVellis' (2012) suggested procedure for self-report scale development, we examined the remaining nine items to further ensure content validity. An exploratory factor analysis (EFA) using principal axis factoring as well as a confirmatory factor analysis (CFA) confirmed the assumed unidimensionality of the scale ($\chi^2 = 4036.67$; $df = 36$, CFI = .92, RMSEA = .11). In an attempt to further shorten the scale, we reexamined item content of the nine items and removed two items that may have been interpreted as confusing or unclear by participants. Next, we examined reliability estimates of the remaining items and removed two more items that demonstrated low item-total correlations. The results of this iterative process produced a scale consisting of five items that captures our definition of WHV. CFA results indicated a good fit to the data ($\chi^2 = 44.82$; $df = 5$, CFI = .98, RMSEA = .09), although the RMSEA was slightly larger than the recommended value of .08 (Browne and Cudeck 1993; Hu and Bentler 1999). Participants responded on a five-point rating scale ranging from 1 (*Not at all*) to 5 (*Very much*) using the past month as the frame of reference. Cronbach's alpha for the five-item scale was .87.

Employee Outcomes We examined exhaustion, physical symptoms of work stress, work-to-family conflict, and sleep as employee outcomes, using the past month as the frame of reference. *Exhaustion* was measured with eight items from the Oldenburg Burnout Inventory (OLBI; Demerouti et al. 2003) on a 5-point rating scale, ranging from 1 (*Not at all*) to 5 (*Very much*). A sample item was "After my work, I usually felt worn out and weary." Cronbach's alpha for the scale was .85. The Physical Symptoms Inventory (Spector and Jex 1998) was used to assess experiences of *physical health symptoms*. It consisted of a twelve-item symptom checklist with response options ranging from 1 (*Not at all*) to 5 (*Everyday*). Sample items include "loss of appetite" and "headache". *Work-to-family conflict* (Netemeyer et al. 1996) was measured with five items on a 5-point rating scale ranging from 1 (*Not at all*) to 5 (*Very much*). A sample item included "The demands of my work interfered with my home and family life". Cronbach's alpha for the scale was .93. We assessed *sleep quantity* and *sleep quality* using two items from the Pittsburgh Sleep Quality Index (Buysse et al. 1989). Sleep quantity was measured with the following item: "During the past month, on average, how many hours of actual sleep did you get at night?" Participants indicated the number of hours they slept on average. Sleep quality was measured with the following item: "During the past month, how would you rate your sleep quality overall?" Participants responded on a 5-point rating scale ranging from 1 (*Very bad*) to 5 (*Very good*).

Control Variables Based on past research we decided to include several control variables (i.e., veteran status, recent physical confrontation with an inmate, security level, job tenure, gender). *Veteran status* may be associated with higher levels of WHV resulting from (traumatic) combat experiences (Kimble et al. 2013). Therefore,

participants were asked to indicate if they ever served on active duty in the U.S. Armed Forces. It is also possible that a recent *physical confrontation with an inmate* may be associated with WHV, as well as with employee strain. Therefore, we asked participants to indicate if they had a physical confrontation with an inmate in the past month. Furthermore, we asked participants to indicate the *security level* of the inmates that they were responsible for (maximum, medium, or minimum) given that working in a maximum-security environment may be associated with higher levels of WHV and higher strain levels (Stohr et al. 2012). Given that *job tenure* may be associated with advantages (e.g., ability to choose preferred work shifts and potential development of coping skills), as well as disadvantages (e.g., accumulated strain over time), it may be linked to differences in WHV, strain, and well-being outcomes. Therefore, we asked participants to indicate how long they had been working in corrections. Finally, we controlled for *gender* since initial research in the correctional setting indicates that female officers tend to report higher levels of work stress (Castle and Martin 2006).

Results

WHV Before proceeding with the analyses to test our hypotheses we first examined the descriptive statistics for our WHV scale. The mean for WHV was 3.95 and the standard deviation was .84 (range: 1.40–5.00). The means for the individual items ranged from 3.71–4.40, and the standard deviations ranged from .75–1.18. Thus, participants overall reported experiencing medium to high levels of WHV. Given that we assume that WHV is different from the experience of traumatic experiences, anxiety, and PTSD-like symptoms, we empirically examined these relationships. Results indicated significant small to moderate relationships with anxiety ($r = .27$) and PTSD-like symptoms ($r = .31$). Veteran status was not significantly related to WHV ($r = .04$). Past physical confrontation with an inmate was negatively associated with WHV ($r = -.19$).

Descriptive statistics and intercorrelations between study variables are displayed in Table 1. We conducted hierarchical linear regression analyses to examine the hypothesized relationships between WHV and employee outcomes. Given the nesting of participants within facilities, we calculated intraclass correlation coefficients (ICCs) to determine if a nested structure was necessary, acknowledging that parameter estimates resulting from multilevel analyses may be affected by the relatively small number of groups (i.e., 14 facilities; Maas and Hox 2005). A calculation of the intraclass correlation coefficients (ICC1) for the dependent variables indicated that they were well below standard rules of thumb for multilevel modeling (i.e., $< .10$; Bliese 1998), indicating that facility membership accounts for an extremely small percentage of the variation in the outcomes. Therefore, we report the results of ordinary least square (OLS) regressions controlling for potential variance explained by the facilities through 13 dummy codes for facilities.¹ To test our hypotheses, we entered control

¹ Dummy codes for facility are not reported in the tables. Analyses using OLS regression without controlling for facility, did not change our results.

variables in the first step of the regression models, followed by WHV in the second step. Hypotheses 1, 2, and 3 were supported, indicating positive relationships between WHV and exhaustion ($\beta = .31, p < .001$), physical symptoms ($\beta = .34, p < .001$), and work-to-family conflict ($\beta = .37, p < .001$). Furthermore, WHV was negatively associated with both sleep quantity ($\beta = -.15, p < .001$) and sleep quality ($\beta = -.21, p < .001$), thereby supporting Hypothesis 4. In summary, WHV predicted all employee outcomes as hypothesized while controlling for a range of control variables.² Tables 2 and 3 display these results.

Discussion

The core job responsibilities of COs – controlling the behavior of inmates and preventing violence from occurring – require a constant level of alertness. Although being alert and on the lookout for potential danger is crucial for successful performance in safety-sensitive jobs such as corrections, sustained levels of such hyper-vigilance over time may take a toll on employee health and well-being. Based on theoretical assumptions around sustained arousal and activation (Ganster and Rosen 2013; McEwen 1998; Meurs and Perrewé 2011; Ursin and Eriksen 2010) this study examined relationships between WHV and employee outcomes. In the context of CATS we hypothesized that high levels of WHV would create sustained activation and accumulated demands and would therefore be linked to increased employee strain. Our findings indicate that WHV is associated with increased exhaustion, as well as physical symptoms of stress, pointing to an accumulation of strain. This strain becomes apparent on a psychological (i.e., feelings of exhaustion) as well as physical level (i.e., reporting symptoms such as digestive problems or headaches). Our results further show positive relationships between WHV and work-to-family conflict. Thus, experienced WHV reported by COs seems to impact their nonwork domain, impacting CO experiences and behaviors at home. This is also reflected in the relationships we found between WHV and employee sleep. Specifically, WHV was associated with decreased quality as well as quantity of sleep. Thus, the sustained arousal associated with WHV may make it hard for COs to fall or stay asleep, thereby impacting the amount as well as the perceived restfulness of their sleep.

By developing a short survey measure of WHV and examining relationships with important employee outcomes, our study builds on past conceptualizations around alertness and perceptions of danger. Further, our study incorporated the concept of WHV more deeply into occupational health research and provides a way to conceptualize and assess WHV more broadly. In the context of our study we found that employee experiences of WHV were quite high ($M = 3.95, SD = .84$, on a scale of 1 to 5), supporting our argument that this is a prevalent experience in corrections, and likely in other safety sensitive occupations as well. Our results indicate that

² Analyses including negative affect as an additional control variable produced the same pattern of results with one exception (i.e., WHV was no longer significantly related to sleep quantity). These results are available upon request from the first author.

Table 1 Means, standard deviations, and zero-order correlations of study variables

	<i>M</i>	<i>SD</i>	1	2	3	4	5	6	7	8	9	10	11
1. Veteran	.69	.46	–										
2. Confrontation	.71	.45	.07	–									
3. Security	1.90	.70	.06	-.16**	–								
4. Tenure	12.03	7.13	-.14*	-.06	.05	–							
5. Gender	.20	.40	.26**	.16**	.02	-.15**	–						
6. WHV	3.95	.84	.04	-.19**	.08*	-.02	-.02	.86					
7. Exhaustion	3.15	.76	.05	-.10**	.00	.04	.00	.33**	.85				
8. PSI	25.65	7.71	.01	-.09*	-.03	-.03	.04	.33**	.59**	–			
9. WFC	3.11	1.16	.08*	-.14**	-.07	-.07*	-.08*	.38**	.62**	.51**	.93		
10. Sleep quantity	5.91	1.22	.03	.08*	-.03	.03	.02	-.17**	-.31**	-.19**	-.44**	–	
11. Sleep quality	2.82	1.00	-.04	.10*	-.01	.08*	.03	-.22**	-.49**	-.25**	-.55**	.56**	–
12. NA	2.31	.55	.03	-.07	.02	.02	-.00	.29**	.54**	.56**	.46**	-.26**	-.33**

Values on the diagonal represent Cronbach's alpha for the measures. Veteran was coded No = 0 Yes = 1. Confrontation (with an inmate) was coded No = 0 Yes = 1. Security was coded Minimum = 1 Medium = 2 Maximum = 3. Gender was coded Male = 0, Female = 1. WHV = Work-related Hypervigilance. PSI = Physical Symptoms Inventory. WFC = Work-to-Family Conflict. NA = Negative Affect. *N* = 606–982

Table 2 Hierarchical multiple regression of exhaustion, physical symptoms of stress, and work-family conflict on WHV

Predictor	Exhaustion			Physical Symptoms			WFC		
	<i>B</i>	<i>R</i> ²	ΔR^2	β	<i>R</i> ²	ΔR^2	β	<i>R</i> ²	ΔR^2
Step 1 (control variables)		.07***			.04			.09***	
Veteran	.04			-.01			.09*		
Confrontation	-.05			-.04			-.09*		
Security	.09			.00			-.01		
Tenure	.07			-.02			-.08*		
Gender	.01			.04			-.09*		
Step 2		.17***	.09***		.15***	.11***		.23***	.13***
WHV	.31***			.34***			.37***		

Beta weights are standardized and refer to the full model. Dummy codes for each facility were entered into each regression but are not reported in table for parsimony. Significance of the dummy variables helped to drive significant R^2 values. WFC = Work-to-Family Conflict. WHV = Work-related Hypervigilance. * $p < .05$, ** $p < .01$, *** $p < .001$. $N = 613$ – 663

WHV as measured through our scale seems to be a unidimensional construct with adequate internal validity. Regression analyses further indicated that WHV is associated with higher employee strain while controlling for veteran status, recent physical confrontation with an inmate, facility security level, and negative affect, all of which might explain variance in WHV as well as our examined outcomes. Therefore, we the experience of WHV in and of itself matters for employee and organizational outcomes, rather than the absolute level of danger.

Table 3 Hierarchical multiple regression of sleep quantity and sleep quality on WHV

Predictor	Sleep Quantity			Sleep Quality		
	β	<i>R</i> ²	ΔR^2	β	<i>R</i> ²	ΔR^2
Step 1 (control variables)		.05			.06**	
Veteran	.02			-.04		
Confrontation	.05			.07		
Security	-.02			-.06		
Tenure	.04			.08		
Gender	.01			.03		
Step 2		.07***	.02***		.10***	.04***
WHV	-.15***			-.21***		

¹ Beta weights are standardized and refer to the full model. Dummy codes for each facility were entered into each regression but are not reported in table for parsimony. Significance of the dummy variables helped to drive significant R^2 values. WHV = Work-related Hypervigilance. * $p < .05$, ** $p < .01$, *** $p < .001$. $N = 538$ – 662

Limitations and Future Directions

Our results are based on a cross-sectional research design, which prohibits us from claiming that any of the examined relationships are causal. We see this design as adequate to test initial associations between a construct and employee outcomes. We strongly encourage future research to explore the relationships between WHV and employee outcomes in more depth using longitudinal designs including different time frames. WHV may be an indicator of chronic activation and alertness which also means that it may be more likely for relationships with employee outcomes to develop over longer periods of time (weeks, months, years). In addition, certain aspects of WHV may fluctuate within a given workday and may be linked to employee outcomes (e.g., fatigue and ego depletion) at the day level. To better examine and understand such dynamics, day level designs examining within-person relationships would be beneficial.

Another limitation of our study includes the sole use of employee self-reports to assess predictors as well as outcome variables. Despite the potential for biases (Podsakoff et al. 2003) resulting from such a research design, the inclusion of relevant control variables helped alleviate some of these concerns. Ideally, we would have also sought other-reports (i.e., supervisor, spouse, coworker) of WHV and the employee outcome variables. However, in our conversations with the representatives of the Department of Corrections and interviews with COs, it was indicated that their privacy and safety concerns would interfere with collecting this type of data for our study, which is consistent with previous research in the correctional setting (Lombardo 1989). Still, future research should aim at collecting data beyond self-reports (e.g., physiological indicators of health such as blood pressure).

Although the outcome measures we used represent established constructs and measures, sleep quality and quantity were only assessed with single-item measures. As a result, we may not have captured the complexity of employee sleep problems in enough depth. In addition, the relationship between WHV and sleep quality – although significant – was quite small. Therefore, we encourage future research on WHV to include assessments of outcomes beyond self-reports including more comprehensive and more objective measures of sleep.

The results regarding WHV and employee outcomes are based on a newly developed measure that has not yet undergone stringent validity testing. Although we were careful and thorough in the development and empirical examination of the WHV scale, future research should examine the nomological net of WHV. Specifically, we encourage research to further examine links between WHV and specific predictors (e.g., job demands or individual differences among COs), similar constructs (e.g., aspects of workplace safety or safety perceptions), and employee and organizational outcome (e.g., employee health, absenteeism, or turnover intentions). Our study can be seen as a starting point, given that it points to five potential outcomes of WHV. Thus, we hope that our study will foster a more extensive exploration of the phenomenon of WHV considering important predictors, correlates, and outcomes for employees and organizations. Future research should also examine potential moderators in these relationships. For example, certain types of employees may not only be more likely to experience WHV, but may also be more vulnerable to impairments in health and well-being. Furthermore, future research may explore the process linking WHV and employee outcomes in more depth. Specifically, it would be helpful to better understand the mechanisms related to arousal that can explain this process.

Future research may further examine WHV within other safety sensitive occupations such as transportation, health care, the military, firefighting, or policing to determine how widespread WHV is within organizations. In all these work contexts (as well as in the correctional setting) it is additionally important to further explore the link between WHV, traumatic experience, and PTSD. In that context it is interesting to note that we found a small but significantly negative correlation between WHV and a recent physical confrontation with an inmate. Given the cross-sectional design of our study, we are hesitant to draw causal inferences based on this relationship. Therefore, it is important for future research to understand how WHV may predict, result from, or co-occur with traumatic experiences, and PTSD as a stepping stone to help employees better cope with impairments resulting from such challenging experiences.

Implications for Practice

Because WHV may be important for ensuring workplace safety and employee performance, organizations may be hesitant to suggest that employees reduce their levels of alertness at work. Rather, organizations could focus on providing resources that help alleviate the negative effects of WHV on employee well-being and work-life balance. For example, supervisors can be trained to be more supportive. Specifically, family-supportive supervisor behavior (FSSB) training has been shown to reduce work-family conflict (Kelly et al. 2014) and improve employee sleep (Olson et al. 2015), job satisfaction, and reports of physical health (Hammer et al. 2011). FSSB may therefore help reduce the negative impact of WHV on employee outcomes.

We assume that WHV goes along with increased emotional, cognitive, and physiological arousal that – as our results indicate – is associated with employee strain (exhaustion and physical symptoms), work-to-family conflict, as well as poor sleep. Therefore, interventions aimed specifically at the reduction of activation and tension during nonwork time may be especially helpful. Past research indicates that specific recovery experiences during nonwork time – such as relaxation and psychological detachment from work – can be especially helpful for the reduction of strain and improvements in well-being (Sonnentag and Fritz 2007). Thus, teaching or promoting positive forms of unwinding may be beneficial for reducing officer activation connected to WHV. Similarly, in the context of reducing OTSR, Diamond et al. (2013) suggested that distraction, distancing oneself through leaving the situation for a short time, or support may be helpful approaches to intervention. These strategies may also be helpful in the context of WHV. For example, Meichenbaum's (2007) stress inoculation training incorporates relaxation techniques that may be especially helpful in reducing WHV. Furthermore, intervention approaches around mindfulness may be helpful in reducing the mental and physical activation and tension that come along with WHV (Allen and Kiburz 2012; Grossman et al. 2004). Given the chronic nature of hypervigilance, intervention efforts should include all security staff in a given organization rather than just those reporting symptoms of PTSD and/or those reporting a recent traumatic safety incident. Although our results indicate potentially detrimental outcomes of WHV, a heightened awareness of one's surroundings is crucial for safety and job performance. Therefore, intervention efforts should aim at reducing employee activation when it is no longer needed for effective job performance.

Appendix

WHV Scale

To what extent do you agree with the following statements? In the past month...

1. I had to be on guard to stay safe.
2. Bad things may have happened if I had not constantly been looking out for danger.
3. I may have put myself and the people around me in danger if I had not always been on guard.
4. I always kept an eye out for potential danger.
5. If I relaxed I may have made myself more vulnerable to dangerous situations.

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