

Supplemental Tables

Table S1 Description of latent class analysis indicator variables

Indicator Variable	Variable Description
Pittsburgh Sleep Quality Index	Sleep disturbance, quality, duration, latency, medication usage, habitual sleep efficiency, and daytime dysfunction are components of the Pittsburgh Sleep Quality Index (PSQI). This 19 item self-administered questionnaire evaluates sleep quality over a one-month period (Buysse et al. 1989). Individual components are scored on a 4-point Likert scale ranging from 0-3. For this analysis, individual components were dichotomized using a cut-off value of ≥ 2 . Scores ≥ 2 indicate poor sleep.
Spielberger Police Stress Survey	Physical and psychological threats (24 items), administrative and organizational pressure (23 items), and lack of support (13 items) are subscales of the Spielberger Police Stress Survey (SPPS) and consists of 60 items that assess acute and chronic stress in police officers (Spielberger et al. 1981). Scores across the 60-items were summed to get a total stress rating. For this analysis, participants in the highest quartile are considered to have high stress for the total stress rating and each component.
Vital Exhaustion	Fatigue was measured using vital exhaustion (VE), which measures feelings of excessive fatigue and lack of energy; increasing irritability; and feelings of demoralization. Individual components include: 1) Do you feel more listless than before joining law enforcement?; 2) Do you sometimes feel that your body is like a battery that is losing its power?; 3) Do you feel dejected?; 4) Do you frequently experience a sense of exhaustion at work?; 5) Do you often feel tired?; 6) Do you often have trouble falling asleep?; 7) Do you repeatedly wake up in the middle of the night?; 8) Do you feel weak all over?; 9) Do little things irritate you more than before you joined law enforcement?; 10) Do you ever wake up with feelings of exhaustion and fatigue? (Appels and Mulder 1988). A yes response indicates a poor or maladaptive response. For this analysis, scores across the 10-items were summed to get a total fatigue rating. Participants in the highest quartile are considered to have high fatigue.
Social Support	Social support (SS) was measured using the Social Provisions Scale, which consists of 22 items that were developed to assess six provisions of social relationships (Sugawara and Nikaido 2014). For this analysis, participants below the 75% percentile cut-off were considered to have low social support.
Perceived Stress	Perceived stress is measured using the perceived stress scale (PSS), which is a 10-item scale that measures the frequency of stressful events and experiences during the previous (Cohen et al. 1983). Perceived stress is measured on a 5-point Likert scale ranging from 0-4. For this analysis, participants in the highest quartile were considered to have high perceived stress.
Depression	Depression was measured using the Center for Epidemiologic Studies Depression Scale (CESD) (Van Dam and Earleywine 2011). Participants with a score ≥ 16 are considered to have depression.

Table S2 Fit statistics for latent class models

Number of Classes	Police-specific Model							General Symptom Model						
	Residual df	AIC	BIC	G ²	Entropy	BS-LRT	%Solution	Residual df	AIC	BIC	G ²	Entropy	BS-LRT	%Solution
2	238	204.03	263.34	30.42	0.85	--	100.0	6	26.56	57.96	8.56	0.69	--	100.00%
3	229	201.86	292.57	149.86	0.69	0.18	60.60	1	30.20	79.05	2.20	0.69	0.22	63.00%
4	220	205.62	327.73	135.62	0.72	0.60	73.8	-4	38.75	105.04	0.75	0.64	0.39	10.60%
5	211	211.76	365.27	123.76	0.72	0.83	57.4	-9	48.59	132.33	0.59	0.70	--	88.6%

Abbreviations: df = degrees of freedom; AIC = Akaike Information Criterion; BIC = Bayesian Information Criterion; G² = Likelihood-ratio chi-square statistic; BS-LRT = Bootstrap Likelihood Ratio Test; %Solution – Percentage of seeds associated with best fitted model.

Table S.3 Mean Heart Rate Variability Measure^a by Shiftwork Adaptation Group, BCOPS Study, 2004-2005 (n=430)

HRV Measures	Police-specific Model							A vs M	A vs D	M vs D
	Adapted (n=169)		Maladapted (n=73)		Day Shift (n=188)					
	Mean	SE	Mean	SE	Mean	SE				
SDNN ln(ms) ¹	3.32	0.04	3.27	0.05	3.28	0.04	0.40	0.44	0.84	
RMSSD ln(ms) ²	3.67	0.06	3.59	0.07	3.57	0.06	0.29	0.10	0.79	
HF-HRV ln(ms ² /Hz) ³	4.71	0.13	4.93	0.15	4.83	0.12	0.17	0.38	0.59	
LF-HRV ln(ms ² /Hz) ⁴	5.19	0.08	5.27	0.12	5.21	0.07	0.51	0.83	0.67	
HRV Measures	General Symptom Model							A vs M	A vs D	M vs D
	Adapted (n=186)		Maladapted (n=56)		Day Shift (n=188)					
	Mean	SE	Mean	SE	Mean	SE				
SDNN ln(ms) ¹	3.30	0.04	3.30	0.06	3.28	0.04	0.95	0.61	0.76	
RMSSD ln(ms) ²	3.65	0.06	3.64	0.08	3.56	0.06	0.92	0.18	0.39	
HF-HRV ln(ms ² /Hz) ³	4.85	0.09	5.01	0.15	4.96	0.10	0.36	0.45	0.76	
LF-HRV ln(ms ² /Hz) ⁴	5.30	0.07	5.28	0.12	5.30	0.08	0.88	0.97	0.91	

^a - Least squares mean ± standard error of the mean. ¹Model adjusted for age, physical activity, BMI, and antidepressants. ²Model adjusted for age, physical activity, BMI, and antidepressants. ³Model adjusted for age, sex, physical activity, and antidepressants. ⁴Model adjusted for age, gender, physical activity, and BMI. ^aOverall p-value for the variable of interest. ^bp-values for multiple comparisons between categories of shift work. *p≤0.05 versus maladapted group. SE: standard error of the mean. ln = natural log. HF-HRV = high frequency heart rate variability (0.15-0.40 Hz), LF-HRV = low frequency heart rate variability (0.04-0.15 Hz), SDNN = standard deviation of N-N intervals, RMSSD = root mean square of successive differences, BMI: body mass index (kg/m²), ms = milliseconds. Hz: hertz. HRV: heart rate variability

Supplemental Figures

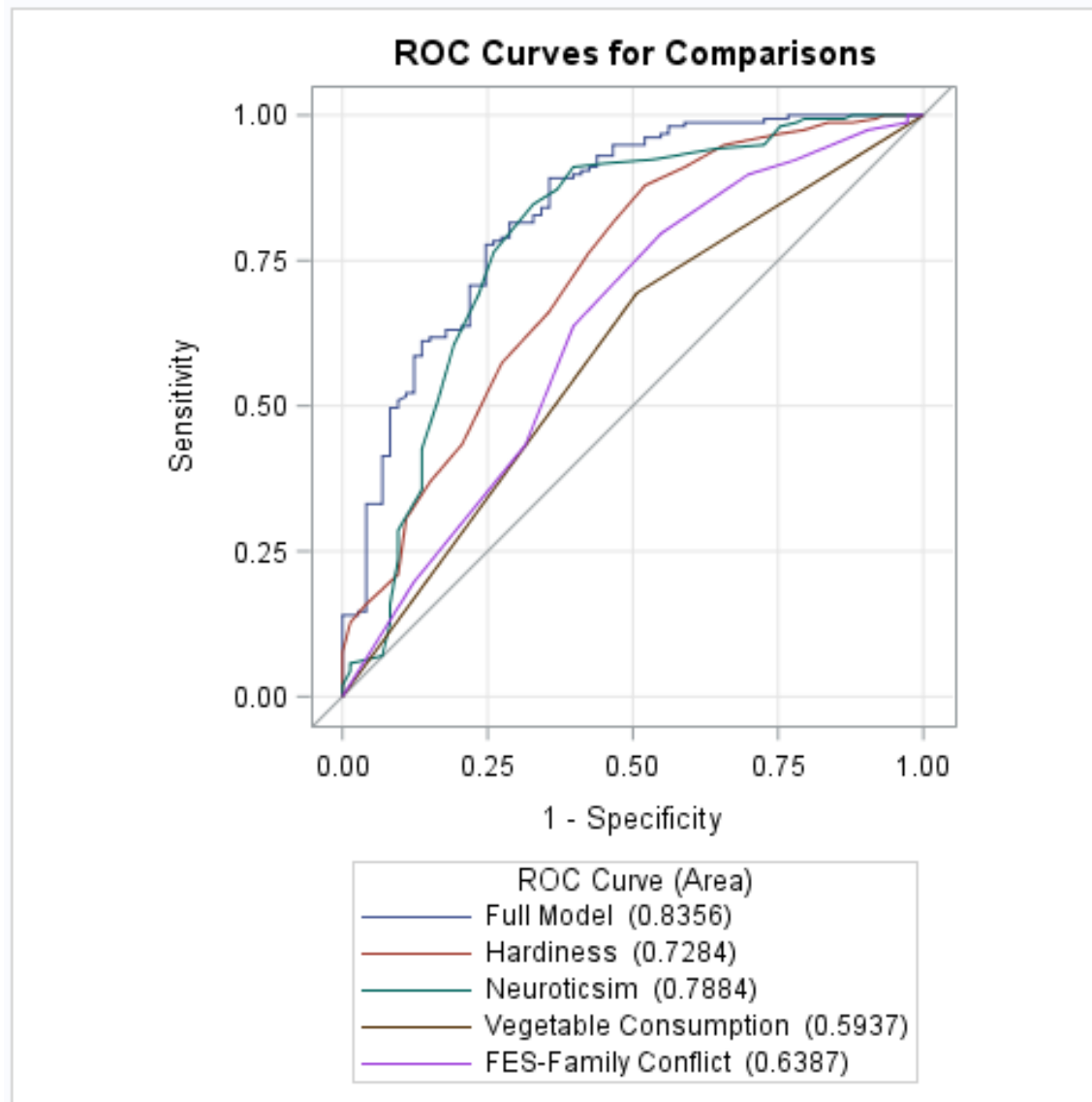


Figure S1. Police-specific Model. Receiver operating characteristic curves for membership to the shiftwork adapted latent group. Full model area under the curve = 0.84; 95% confidence interval: 0.78-0.89; Hardiness area under the curve = 0.73; 95% confidence interval: 0.66-0.80; Neuroticism area under the curve = 0.79; 95% confidence interval: 0.72-0.86; Vegetable Consumption area under the curve = 0.59; 95% confidence interval: 0.53-0.66; FES-Family conflict area under the curve = 0.64; 95% confidence interval: 0.56-0.72.

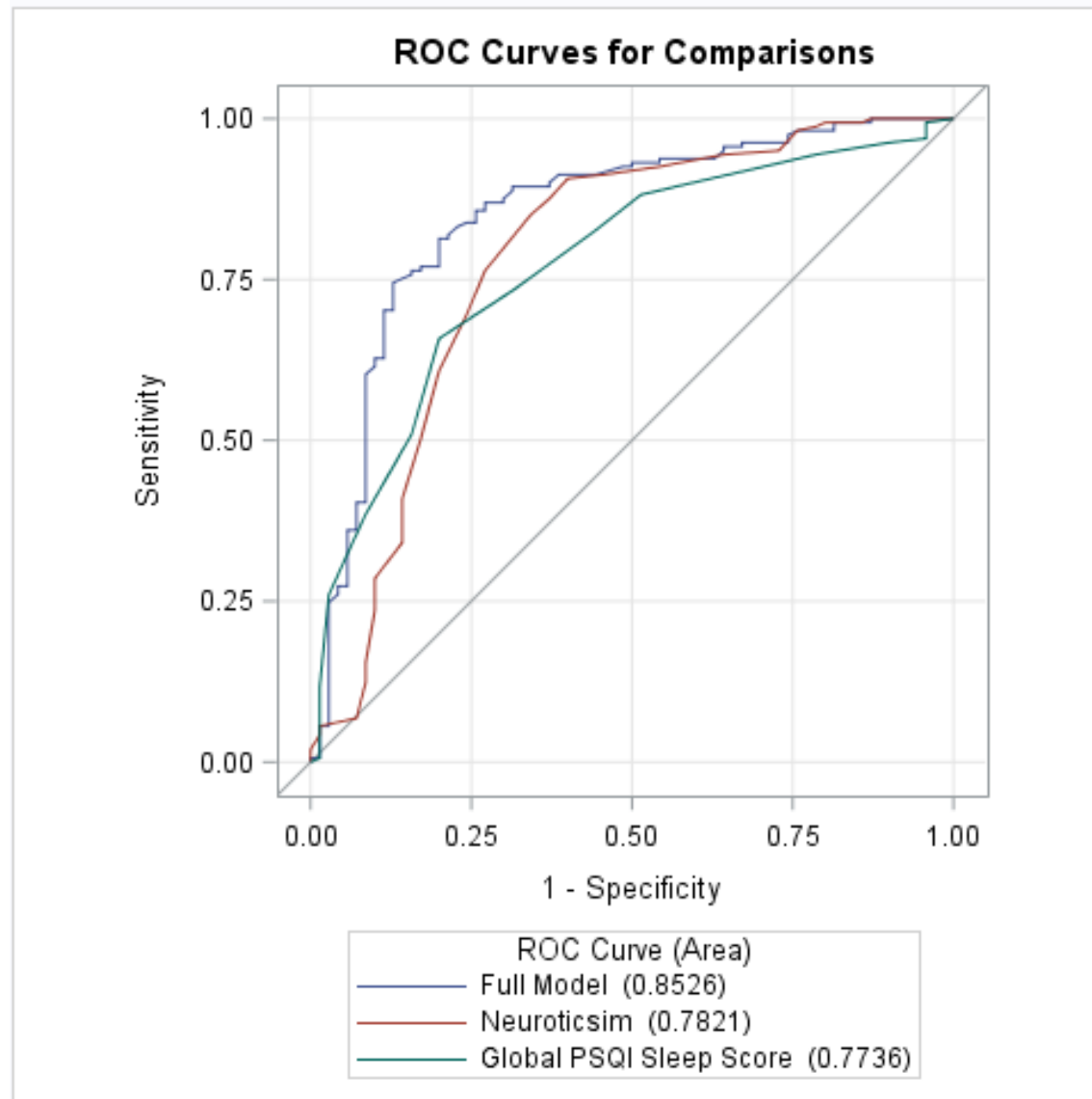


Figure S2. General Symptom Model. Receiver operating characteristic curves for membership to shiftwork adapted latent group. Full model area under the curve = 0.85; 95% confidence interval: 0.79-0.91; Neuroticism area under the curve = 0.78; 95% confidence interval: 0.71-0.86; Global Sleep Quality Score (PSQI) area under the curve = 0.77; 95% confidence interval: 0.71-0.84.