

1 **Title: Age, gender, personality, burnout, job characteristics and job content as**
2 **predictors of driver fatigue.**

3

4 **Background:** Several studies have shown that one of the most common causes of collision is
5 driver fatigue since fatigue causes drowsiness while driving and this decreases the driver's
6 ability to maneuver the vehicle and increases the probability of their nodding off and falling
7 asleep at the wheel. This may be due to a variety of personal reasons and specific factors
8 connected to working conditions. In the present work we therefore intend to develop a
9 predictive model on fatigue in professional drivers using the following indicators: Age,
10 Gender, personality, burnout, characteristics, and job content. **Method:** The participants were
11 516 professional drivers from different transport sectors, obtained through non-probabilistic
12 sampling. The SPSS version 25.0 program was used for data analysis. **Results:** The predictive
13 capacity of a number of variables that affect drivers by causing fatigue is determined. Fatigue
14 can be predicted through certain variables, with the best predictor being Exhaustion (48.8%).
15 **Conclusions:** This research contributes to a greater knowledge of the factors that produce
16 fatigue in professional drivers. It highlights the importance of designing interventions to reduce
17 the incidence of fatigue, resulting in greater well-being for the driver and a lower incidence of
18 collisions.

19

20 **Keywords:** Professional Drivers; Fatigue; Burnout; Personality; Occupational health; Labor
21 risks.

22 1. Introduction

23 One of the most common causes of collisions is driver fatigue (1–6). This has usually
24 been considered a subjective complaint that may indicate tiredness, weakness, lack of energy,
25 intense desire to sleep, lack of ability to concentrate, muscle weakness and even dyspnea.
26 Phillips (7) groups the different definitions that can be found and proposes a new definition of
27 fatigue as a suboptimal psychophysiological condition caused by exertion. This fatigue brings
28 about changes in a person's strategies and use of resources in such a way that their physical
29 activity and mental processing is maintained or reduced (7). In addition, each person has a
30 different threshold for fatigue. For this reason fatigue can be considered to be the changes that
31 the organism experiences when a person tries to overcome their limit of exertion, and this can
32 occur due to over-training, lack of habituation to a task or to a specific intensity (8). Fatigue
33 causes drowsiness while driving and this can cause collisions because it decreases the driver's
34 ability to maneuver the vehicle and increases the likelihood of their nodding off and falling
35 asleep at the wheel (9). It is something that produces high mortality rates and losses in
36 infrastructure (10) but that can be minimized if corrective action is taken (11).

37 According to Norman (12), fatigue is a multicausal phenomenon with the following
38 characteristic: the decreased capacity of response or action of a person. Despite being
39 multicausal, it may be found that one specific factor has a greater contribution. Fatigue affects
40 the organism as a whole (physically and mentally) to varying degrees, so each person will feel
41 it in a different way and at a different intensity. It is also influenced by situations and personal
42 characteristics. In addition, the feeling of fatigue is a mechanism of our adaptive organism that
43 indicates the need for rest. Having both physical and mental symptoms, it is a complex
44 sensation that ranges from feeling good to being exhausted (13) and takes on special
45 importance when assessing vehicle drivers. Therefore three factors that influence fatigue were
46 determined: (1) labor factors, such as working many hours without having time to recover, (2)

47 sleep factors, as in the case of alteration of circadian rhythms (driving at times when you
48 usually sleep or vice versa), plus the number of hours slept, and (3) health and lifestyle (14).

49 Some authors (15,16) also point out that lack of sleep or altered sleep patterns cause
50 fatigue and mood changes, worsen performance and bring about changes in body systems and
51 immunosuppression.

52

53 *1.1. Job Characteristics*

54 Long working hours and responsibility for passenger safety can cause stress (17).
55 Taylor and Dorn (18) relate stress and fatigue in bus drivers to the risk of collisions as well as to
56 the generation of health problems. Santos and Lu (19) report that bus drivers work an average
57 of 16 hours a day. Professional drivers, whose work requires many hours behind the wheel,
58 have a higher risk of collisions, and these collisions tend to be more serious than those of
59 non-professional drivers (20–22). Kwon et al. (23) associate different factors with each risky
60 driving behavior, including working for more than 12 hours a day and excessive daytime
61 sleepiness, which give rise to constant risk when driving.

62 Another important factor to take into account is shift work, due to the association
63 between collisions involving professional drivers, fatigue and shift work (24). As well as
64 playing an important role in the loss of sleep, it can also severely affect a task such as driving,
65 which requires sustained vigilance and rapid reaction times, through causing sleepiness in the
66 driver (20).

67 There is a high prevalence of work stress and exhaustion among Colombian bus drivers,
68 and this has been associated with traffic collisions (25), aggravated by the fact that bus drivers
69 perform risky behaviors such as fast driving to avoid being late and rapid passenger loading
70 (19).

71 Other authors have also linked sleep dysfunctions to work stress and working hours
72 (26), fatigue (27) and performance (28). Some authors (29) describe other variables that lead to
73 mental health problems in professional drivers, these being work pressure, low rewards and
74 little support from coworkers. Other job characteristics that have been studied in professional
75 truck drivers include conflict in the role of finding a positive correlation with the three
76 dimensions of burnout, and ambiguity in the role that has been positively related to low
77 personal achievement (30).

78 The dimensions of the Job Diagnostic Survey have been studied in various areas of
79 professional work. It has been found that Task identity positively predicts relaxed driving and
80 hazard prevention, while feedback from the job negatively predicts fatigue and anxiety, and
81 feedback from agents negatively predicts alertness and vigilance (31).

82 The Job Content Questionnaire, on the other hand, has found the associations between
83 social support and risky driving, fatigue and the need for recovery to be mediating variables
84 (32). Significant direct and indirect effects between emotional demands (individual and daily)
85 and self-reported shocks (33) have also been found, mainly in acute fatigue and safety
86 motivation.

87 ***1.2. Fatigue***

88 Fatigue at work has traditionally been related to the number of hours worked (34). A
89 high level of fatigue makes it more likely that a driver will drift from their lane, change
90 direction and have a decreased reaction time to sudden braking (35). Perceived high fatigue,
91 normal daytime sleepiness and poor mental health have also been associated with not wearing a
92 seat belt (23). Fatigue and the need for recovery are mediating variables in the associations
93 between work stress and risky driving (32). In addition, fatigue has greatly contributed to truck
94 collisions (36–38), while mental fatigue (as a component of burnout) predicts sleep disturbance
95 (27).

96 ***1.3. Driver Characteristics***

97 With regard to the driver's age, this has a negative effect on performance as it reduces
98 reaction times (39). Older subjects have a worse initial performance than young subjects, and
99 young subjects' performance is significantly better than that of older subjects when they rested.
100 However, lack of sleep significantly affects young people, while older subjects' performance is
101 not significantly altered (40)

102 Gander et al. (41) found that drivers involved in collisions did not differ greatly in age,
103 number of hours' driving or time elapsed since their last rest day. However, when they studied
104 drivers involved in crashes related to fatigue, they found that these drivers had driven longer
105 and been on duty longer on the day of the crash. In a study analyzing road collisions, it was
106 found that young drivers have a higher risk of night collisions, and also that there was a
107 moderate gender (male) effect. Night risk, compared to morning risk, is higher in young drivers
108 (18-24) than in older drivers (65+). The authors also found that young drivers had a 5 to 10
109 times higher risk of being involved in a collision during the night and in the morning. Women
110 had a less pronounced night peak than men, and indeed men were found to have twice the risk
111 of women during the late hours of the night (42).

112 As regards personality factors, Thiffault and Bergeron (43) found that drivers who
113 obtain high scores in the search for experiences and extrovert dimensions may be more
114 sensitive to road monotony and therefore more prone to driving errors related to fatigue in less
115 demanding road environments. A relationship has also been found between conscientiousness,
116 which positively predicts hazard prevention, and agreeableness, which negatively predicts the
117 search for sensations in professional drivers (31).

118 ***1.4. Burnout***

119 Stress factors related to work tend to produce burnout in professional drivers (44).
120 Burnout correlates with the driver's mental load (45), this being one of the consequences

121 attributed to it, especially as regards cynicism, which possibly relates to the cognitive area and
122 manifests itself in self-criticism, which is the personal devaluation that potentially leads to
123 distrust and contempt for work (46). Several authors have related driving to Burnout (45,47–
124 49).

125 The prevalence of work stress and burnout is significantly high among Colombian bus
126 drivers. In addition, the work stress of these drivers is related to burnout indicators and both
127 work stress and burnout are related to traffic collisions (25). McVicar (50) suggests that
128 absence of sleep may be a predictive variable for burnout. In this respect, the most potent
129 predictor of mental fatigue (burnout) is sleep disturbance. (27).

130 This leads us to consider the following hypothesis:

131 *Hypothesis:* If fatigue in the professional driver is influenced by Age, Gender, job
132 characteristics (JDS), personality (OPERAS), job content (JCQ) and Burnout, then a good
133 prediction of fatigue can be made using a model that incorporates these predictors.

134

135 **2. Method**

136 **2.1. Participants**

137 The participants were 516 professional drivers (91.1 % men, 8.9 % women) with an
138 average age of 40.8 ($SD= 13.17$). Marital status: Married or partnered (70.2 %), single (20.7
139 %), divorced or separated (7.9 %) and widowed (1.2 %). The educational level of the
140 participants was University studies (6.2 %), Lower secondary school, Professional Training-II
141 or Prep School (20.3%), Upper secondary school, Professional Training-I or Compulsory
142 secondary education diploma (50.4%) and not finished primary education (23.1 %). The
143 sectors involved were Merchandise transport (46.1 %), Machinery transport (5.2 %), Passenger
144 transport (20.7 %), Ambulances and Healthcare drivers (8.0 %), Taxi drivers (12.8 %) and
145 others (7.2 %). The average number of years' experience was 11.11 ($SD=12.88$).

146 2.2. Instruments

147 The Driver Fatigue (DF-8) instrument developed by Tàpia-Caballero et al. (2021) (51).
148 This is a unifactorial scale of 8 items with a Likert-type response format ($\alpha = 0.88$) (e.g. “5. I
149 feel tired as soon as I start the workday on the bus, truck, combi, van, taxi, etc.”).

150 The Overall Personality Assessment Scale (OPERAS; Vigil-Colet et al. (2013)) (52),
151 which is a questionnaire based on the Big Five personality traits. It consists of 40 items that are
152 answered using a 5-point Likert scale ($1 = totally disagree$ to $5 = totally agree$). This
153 instrument measures Extraversion ($\alpha = 0.86$) (e.g. “20. I make friends easily”), Emotional
154 Stability ($\alpha = 0.86$) (e.g. “15. I often feel sad”), Conscientiousness ($\alpha=0.77$) (e.g. “22. I leave my
155 things messy”), Agreeableness ($\alpha = 0.71$) (e.g. “6. I usually speak well of others”), and
156 Openness to Experience ($\alpha=0.81$) (e.g. “30. I like living in new places”).

157 The Job Diagnostic Survey (JDS-21; Hackman & Oldham, 1974, 1975) (53,54), in the
158 Spanish language version (55). This consists of 7 subscales with 3 items each. The response
159 format is a 7-point Likert scale (from 1- *Very little* to 7- *A lot*). The questionnaire evaluates the
160 characteristics of the work that influence its results. “Factor 1. Skill variety” ($\alpha=0.78$; e.g. “1.-
161 The job requires me to use complex skills or a high level of specialization”), “Factor 2. Task
162 identity” ($\alpha=0.78$; e.g. “11.- The work allows me to completely finish the tasks I undertake”),
163 “Factor 3. Significance” ($\alpha=0.71$; e.g. “14.- The work itself is not very significant or important
164 in the general context”), “Factor 4. Autonomy” ($\alpha=0.73$; e.g. “9.- The work does not give me
165 any chance to use my initiative or personal judgment”), “Factor 5. Feedback” ($\alpha=0.70$; e.g.
166 “12.- The work itself provides me with very few indications about my performance”), “Factor
167 6.- Feedback from agents” ($\alpha=0.70$; e.g. “10.- My superiors often let me know what they think
168 about my performance at work”) and “Factor 7.- Dealing with others in their jobs” ($\alpha=0.72$;
169 e.g. “6.- The work can be carried out by a single person (without consulting with other
170 people”).

171 The Job Content Questionnaire (JCQ-25; Karasek & Theorell, 1990). The Spanish
172 version was used (57) and consists of 28 items distributed in 3 subscales with a four-point
173 Likert-type response scale (0. *Strongly disagree* to 3. *Strongly agree*). This scale describes and
174 analyzes work situations in which stressors are chronic. It focuses especially on the
175 psychosocial characteristics of the work environment. “Factor 1.- Job Demands” assesses the
176 amount of work, the intellectual demands, and the pressure of working time. It consists of 9
177 items ($\alpha=0.74$; e.g. “K19.- My work requires a lot of hard work”); “Factor 2.- Job Control”
178 assesses the possibility of making decisions creatively and applying and developing one's own
179 abilities. It consists of 9 items ($\alpha=0.74$; e.g. “K4.- My work allows me to make many decisions
180 for myself”); and “Factor 3.- Support” assesses the support received from colleagues and
181 superiors. It consists of 11 items ($\alpha=0.87$; e.g. “K41.- The people I work with are interested in
182 me”).

183 The Burnout Scale (MBI-GS; Salanova et al. (2000)) evaluates burnout and includes 15
184 items spread over 3 subscales that are answered using a 7-point Likert scale (0.-*Never / Never*
185 to 6.-*Always / Every day*). The instrument measures “Exhaustion ($\alpha = 0.87$)”, which comprises
186 5 items (e.g. “6.- I'm ‘burned’ for work”), “Cynicism ($\alpha = 0.85$)”, which consists of 4 items
187 (e.g. “9.- I have lost enthusiasm for my work”), and “Professional efficiency ($\alpha = 0.78$)”, which
188 comprises 6 items (e.g. “12.- I have achieved many valuable things in this position”).

189 **2.3. Procedure**

190 To obtain the sample we used non-probability sampling (59), also known as
191 accidental-random sampling (60). The participants answered voluntarily and did not receive
192 any kind of gratification. The confidentiality of the data provided by participants was fully
193 guaranteed. The response rate was 84%.

194 **2.4. Data Analysis**

195 To start we used Pearson's correlation coefficients to calculate the correlations between
196 the predictor variables and the criterion variable. Multiple regressions were then calculated
197 using the stepwise option on the IBM SPSS version 25 program (61).

198 With this method the variables are incorporated into the regression model. There were
199 twenty variables belonging to Age, Gender, Driver Fatigue (DF-8), Variety (JDS.1), Identity
200 (JDS.2), Significance (JDS.3), Autonomy (JDS.4), Feedback (JDS.5), Agents (JDS.6), Dealing
201 (JDS.7), Social Support (JCQ.SS), Job Demand (JCQ-JD), Job Control (JCQ.JC), Exhaustion
202 (MBI.E), Cynicism (MBI.C), Professional efficiency (MBI.3), Extraversion (OP.EX),
203 Emotional Stability (OP.EE), Responsibility (OP.CO), Agreeableness (OP.Ag), and Openness
204 to experience (OP.OE).

205 **3. Results**

206 ***3.1. Reliability analysis***

207 Table 1 shows the instruments used. The indices for internal consistency are
208 appropriate given that they range between 0.70 (JDS.3. Significance and JDS.7 Dealing) and
209 0.88 (JCQ.SS. Social Support and MBI.E. Exhaustion).

210 INSERT TABLE 1 HERE

211

212 ***3.2. Correlation analyses***

213 The correlational study featured below (Table 2) shows only the correlations between
214 Driver Fatigue (criterion variable) and the twenty predictor variables in this study. From the
215 present study we extracted the following correlations and found a positive correlation between
216 Driver Fatigue (DF-8) and four variables: MBI.E. Exhaustion, MBI.C. Cynicism, JCQ.JD. Job
217 Demand, and the number of minutes sitting in the vehicle. We also found a negative correlation
218 with eleven variables: Age, Extraversion (OP. EX), Emotional Stability (OP.EE),

219 Agreeableness (OP.Ag), Openness to experience (OP.OE), Professional efficiency (MBI.3),
220 Variety (JDS.1), Identity (JDS.2), Significance (JDS.3), Autonomy (JDS.4), Dealing (JDS.7)
221 and Job Control (JCQ.JC).

222 INSERT TABLE 2 HERE

223

224 **3.3. Multiple regression**

225 We used a multiple regression model to test the effects of the predictor variables
226 (twenty-two) on the criterion variables in connection with Driver Fatigue. Tables 3 and 4 show
227 the data for the adjusted R^2 indices and the significant typified beta coefficients between the
228 criteria variables and the predictive variables of this study. The model aimed to identify the
229 degree to which these predictor variables were capable of predicting Driver Fatigue (Figure 1).

230 INSERT FIGURE 1 HERE

231 In Table 3 we see the model shown to be the greatest predictor (model 6) and a
232 summary of the model in which we see that the predictor variables Exhaustion (MBI.E), Social
233 Support (JCQ.SS), Openness to experience (OP.OE), Professional efficiency (MBI.3), Job
234 Demand (JCQ-JD) and Variety (JDS.1) account for 54.7 % of the criterion variable's variance.
235 The Exhaustion variable stands out as the best predictor, accounting for 48.8 % of variance.
236 Among the most important aspects are the beta coefficient values. If we take a look at these
237 coefficients we can see that the predictor variables found to be statistically significant were
238 Exhaustion ($\beta= 0.663$), Social Support ($\beta= 0.174$), Openness to experience ($\beta= -0.096$),
239 Professional efficiency ($\beta= -0.152$), Job Demand ($\beta= 0.124$), Variety ($\beta= -0.088$) and Hours
240 worked per week ($\beta= 0.068$).

241 INSERT TABLE 3 HERE

242 INSERT TABLE 4 HERE

243

244 **4. Discussion**

245 The results presented above are in line with the concept that certain variables are
246 predictive of fatigue in professional drivers. The hypothesis is partially fulfilled since it can be
247 observed that the best predictive model for driver fatigue is one that includes six variables.
248 Showing positive were Exhaustion, Social Support and Job Demand, and indeed Åkerstedt et
249 al. (2002) found that stress and the social situation at work affect the quality and lack of sleep,
250 which in turn causes fatigue, disrupts mood, worsens execution and brings about changes in
251 numerous body systems and immunosuppression (15,16). Showing negative were Openness to
252 experience, Professional efficiency and Variety. In this respect Thiffault and Bergeron (2003)
253 found that drivers who obtained high scores in search of experiences could be more sensitive to
254 road monotony and more prone to driving errors related to fatigue in less demanding road
255 environments.

256 We should bear in mind that Emotional Exhaustion, one of the three dimensions of
257 Burnout, is shown as the best predictor. Several authors have related driving with Burnout
258 (45,47–49) and mental fatigue (as a component of burnout) with sleep disturbance (27), all of
259 which may be due to the stressors suffered by professional drivers (5,44).

260

261 **5. Conclusion**

262 The results of this study provide relevant information for research on the factors that
263 cause driver fatigue. In conclusion, the results highlight the importance of designing individual
264 interventions to reduce the incidence of fatigue in professional drivers. This would result in
265 fewer collisions and greater well-being for the driver. In addition, personality measures can be
266 useful in providing information to help in the detection, management, and training of
267 professional drivers.

268 These results have important practical implications (preventive) that should be
269 considered for proper strategic management of human resources within organizations so that
270 the variables that influence fatigue can be detected. Addressing these factors separately may
271 greatly help to identify factors that help workers to improve their health and help companies to
272 reduce the number of collisions and traffic violations.

273 The companies, at the individual level, can promote self-control of working time, as
274 well as organizational and psychosocial (greater social support). Another method of interaction
275 can be the exhaustion assessment during periodic examinations so that drivers are aware of the
276 symptoms of exhaustion and information on prevention can be provided.

277

278 **6. Limitations of the study**

279 This study is not without a number of limitations. First, few women are professionally
280 engaged in transportation, it would have been interesting to have the female population better
281 represented in order to determine whether gender differences exist. Second, the data were
282 obtained via self-report measures, which can lead to bias ranging from social desirability to
283 lack of sincerity (62). Third, it would also have been interesting to use alternative physiological
284 indicators of fatigue. **Another limitation that has not been taken into consideration is use of**
285 **psychoactive substances, including drugs (e.g. amphetamines, marijuana) and pharmacological**
286 **agents (e.g. antidepressants) used as a form of coping and mental problems. These substances**
287 **could interfere with the response of drivers during work causing accidents.** Finally, future
288 research should consider the use of qualitative information collection strategies that would
289 enable better understanding of the characteristics of the work and the impact they may have on
290 fatigue.

291

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294

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492

Table 1*Descriptive statistics and reliability values with Cronbach's α coefficient.*

Variable	Minimum	Maximum	Mean	SD	α
DF-8 Driver Fatigue	8	36	17.15	5.79	0.86
JDS.1. Variety	3	21	11.33	41.180	0.78
JDS.2. Identity	3	21	15.83	4.235	0.77
JDS.3. Significance	4	21	15.64	3.913	0.70
JDS.4. Autonomy	3	21	13.93	4.540	0.74
JDS.5. Feedback	5	21	15.58	3.361	0.71
JDS.6. Agents	3	21	10.69	4.222	0.72
JDS.7. Dealing	3	21	13.18	4.101	0.70
JCQ.SS. Social Support	10	40	26.24	6.003	0.88
JCQ-JD. Job Demand	8	32	21.14	3.533	0.74
JCQ.JC. Job Control	7	28	17.93	4.645	0.74
MBI. E. Exhaustion	0	29	9.27	5.911	0.88
MBI. C. Cynicism	0	24	6.43	4.967	0.85
MBI. PE. Professional efficiency	5	36	27.62	6.368	0.79
OP.EX. Extraversion	18	74	49.29	9.871	0.86
OP.EE. Emotional Stability	4	83	48.81	13.702	0.86
OP.CO. Conscientiousness	12	76	48.99	11.988	0.77
OP.AG. Agreeableness	16	81	49.09	11.857	0.71
OP.OE. Openness to experience	11	69	43.73	10.019	0.81

493 **Variables used in the research:** Driver Fatigue (DF-8), Variety (JDS.1), Identity (JDS.2), Significance
494 (JDS.3), Autonomy (JDS.4), Feedback (JDS.5), Agents (JDS.6), Dealing (JDS.7), Social Support
495 (JCQ.SS), Job Demand (JCQ-JD), Job Control (JCQ.JC), Exhaustion (MBI.E), Cynicism (MBI.C),
496 Professional efficiency (MBI.3), Extraversion (OP.EX), Emotional Stability (OP.EE), Responsibility
497 (OP.CO), Agreeableness (OP.Ag), Openness to experience (OP.OE), Age, Gender.

498

Table 2

499

Correlations between the predictor variables and the criterion variables

500

PREDICTOR VARIABLE	CRITERION VARIABLE
	DF-8
Age	-0.088*
Gender	0.036
Number of minutes sitting in the vehicle	0.111*
Hours worked per week	.052
OP.EX. - Extraversion	-0.105*
OP.EE. - Emotional Stability	-0.119**
OP.CO. - Conscientiousness	-0.079
OP.AG. - Agreeableness	-0.123**
OP.OE. - Openness to experience	-0.250**
MBI. E. - Exhaustion	0.699**
MBI. C. - Cynicism	0.481**
MBI. PE. - Professional efficiency	-0.141**
JDS.1. - Variety	-0.185**
JDS.2. - Identity	-0.113*
JDS.3. - Significance	-0.104*
JDS.4. - Autonomy	-0.127**
JDS.5. - Feedback	-0.055
JDS.6. - Agents	0.050
JDS.7. - Dealing	-0.087*
JCQ.SS. - Social Support	-0.003
JCQ.JD. - Job Demand	0.198**
JCQ.JC. - Job Control	-0.102*

Note: Bold marks significant numbers.

** . The correlation is significant at level 0.01 (bilateral).

* . The correlation is significant at level 0.05 (bilateral).

501

502 **Table 3**503 *Summary of the models, variables and coefficients of regression analysis (stepwise method) for*504 *Driver Fatigue*

Model and Variable	Model						Coefficient				
	R	R ²	R ² Adjusted	R Change	F Change	sig	B	SE	β	t	sig
Model-1	0.699	0.489	0.488	0.489	492.091	0.000					
MBI. E							0.680	0.030	0.690	22.180	0.000
Model-2	0.716	0.512	0.510	0.023	24.234	0.000					
MBI. E							0.719	0.031	0.733	23.207	0.000
JCQ.SS							0.150	0.030	0.155	4.923	0.000
Model-3	0.725	0.526	0.523	0.014	15.229	0.000					
MBI. E							0.696	0.031	0.710	22.379	0.000
JCQ.SS							0.153	0.030	0.159	5.098	0.000
OP.OE							-0.070	0.018	-0.121	-3.902	0.000
Model-4	0.731	0.534	0.531	0.008	8.714	0.003					
MBI. E							0.690	0.031	0.703	22.285	0.000
JCQ.SS							0.185	0.032	0.191	5.828	0.000
OP.OE							-0.068	0.018	-0.118	-3.814	0.000
MBI. PE							-0.087	0.030	-0.096	-2.952	0.003
Model-5	0.737	0.544	0.539	0.009	10.486	0.001					
MBI. E							0.664	0.032	0.677	20.949	0.000
JCQ.SS							0.159	0.032	0.165	4.903	0.000
OP.OE							-0.066	0.018	-0.115	-3.748	0.000
MBI. PE							-0.126	0.032	-0.139	-3.988	0.001
JCQ.JD							0.186	0.057	0.113	3.238	0.000
Model-6	0.741	0.549	0.544	0.005	6.008	0.015					
MBI. E							0.652	0.032	0.665	20.475	0.000
JCQ.SS							0.164	0.032	0.170	5.083	0.000
OP.OE							-0.059	0.018	-0.103	-3.331	0.001
MBI. PE							-0.121	0.032	-0.133	-3.838	0.000
JCQ.JD							0.209	0.058	0.127	3.607	0.000
JDS.1. Variety							-0.108	0.044	-0.078	-2.451	0.015
Model-7	0.744	.553	.547	.004	4.639	.032					
MBI. E							0.650	0.032	.663	20.450	0.000
JCQ.SS							0.168	0.032	.174	5.210	0.000
OP.OE							-0.055	0.018	-.096	-3.104	0.002
MBI. PE							-0.139	0.032	-.152	-4.269	0.000
JCQ.JD							0.204	0.058	.124	3.538	0.000
JDS.1. Variety							-0.123	0.044	-.088	-2.760	0.006
Weekly hours							0.023	0.011	.068	2.154	0.032

Excluded variables: Age, Gender, Number of minutes sitting in the vehicle, Identity (JDS.2), Significance (JDS.3), Autonomy (JDS.4), Feedback (JDS.5), Agents (JDS.6), Dealing (JDS.7), Job Control (JCQ.JC), Exhaustion (MBI.E), Cynicism (MBI.C), Extraversion

(OP.EX), Emotional Stability (OP.EE), Responsibility (OP.CO), Agreeableness (OP.Ag).

505

506

507 **Table 4**508 *Summary of the predictive models for the criterion variables*

509

PREDICTOR VARIABLE	Factor 1 Fatigue	
	ΔR^2 Corrected	β
MBI. E. - Exhaustion	0.488	0.663
JCQ.SS. - Social Support	0.022	0.174
OP.OE. - Openness to experience	0.013	-0.096
MBI. PE. - Professional efficiency	0.008	-0.152
JCQ.JD. - Job Demand	0.008	0.124
JDS.1. - Variety	0.005	-0.088
Hours worked per week	0.003	0.068
Total explained variance (%)	54.7	--

510

511 All the data are significant at $p < 0.01$ (bilateral).

512

513 **Figure 1**
514 *Model followed in this research*
515