

Article

Burning Rubber or Burning Out? The Influence of Role Stressors on Burnout among Truck Drivers

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Abstract: Professional truck drivers are prone to both physical and psychological stress. Such stress can lead to burnout. Drawing on Job Demands Resources literature and stress research, we investigate the relationship between job related role stressors and three components of burnout, among professional truck drivers who are based in the Netherlands. They were surveyed with a time-lagged design (interval of two months). In the first wave, the different potential causes of burnout were measured (role conflict, role ambiguity, quality of sleep, and the perceived emotional intelligence of the dispatcher). In the second wave, the three elements of burnout were measured: emotional exhaustion, depersonalization, and low personal accomplishment. The results of our study indicate that role conflict relates positively to all three components of a burnout. The emotional intelligence of the dispatcher—as perceived by the truck drivers—was negatively related with the three components of a burnout. Finally, the quality of sleep had an impact on depersonalization and emotional exhaustion. Theoretically, several job specific role stressors are confirmed to play a role in truck driver burnout. However, the top three role stressors all appeared to be related to the trucking industry, instead of a particular employer, and they may therefore require national policy measures.

Keywords: truck drivers; role stressors; burnout; perceived emotional intelligence; quality of sleep

1. Introduction

Sustainable work for professional truck drivers is no easy destination. Several factors play a role in the stressing demands for this important transportation job, affecting an important area in logistics as well. For example, drivers must satisfy their company, the shippers, and their receivers. At the same time, they need to comply with safety regulations [1], which may well be conflicting with keeping the stakeholders happy. In addition, truckers' sleep quality is threatened due to, a.o., irregular work schedules and poor sleeping possibilities during work at parking lanes [2]. Disturbed sleep is associated with physical and psychological stress [3]. Moreover, truck drivers are to a large extent dependent on their dispatcher(s) and the way that they facilitate their work. The emotional intelligence of the dispatchers might therefore make a difference as well, when it comes to the psychological stress factors for truck drivers. As these work conditions are conducive to experiencing job stressors, truck driver health and well-being are at stake and they are in urgent need of more attention (see also [4]), to preserve their sustainable employability and participation in the labor market [5].

This is especially relevant, as a shortage of truck drivers is worrying the logistics sector on an international scale [6,7]. LeMay et al. [8] showed that longer average length of haul and age of fleet are

both associated with higher turnover. Therefore, mental health promotion and treatment for truckers is an important area of concern and it must be examined within the broader context of the transportation environment [3].

Shattell et al. [3] indicated that truckers face many occupational stressors, including constant time pressure, social isolation, disrespectful treatment from others, driving hazards, such as weather changes, traffic and road conditions, and violence, or the fear of violence. Truckers also made notice of driving longer and more continuous hours, often while tired, and sometimes altering their logbooks (or keeping double logbooks) to stay in accordance with federal hours of service (HOS) regulations. Statistical evidence is presented by Cantor et al. [9] that electronic logbook adoption does contribute to a reduction in HOS violations. The result also shows that HOS violations mediate the relationship between electronic logbooks and motor carrier crashes. Cantor et al. [9] argue that motor carrier safety is an important carrier management and public policy issue. Large truck accidents cause significant losses on multiple levels beyond the immediate impact of serious injury and the loss of life [10]. Motor carrier crashes can cause numerous types of disruptions to the supply chain [11].

However, only a few studies have empirically investigated the burnout complaints of professional truck drivers (e.g., [1,8]). Sleep complaints are common for burnout victims [12]. Moreover, occupational stress is associated with disturbed sleep [13]. As professional truck drivers are prone to physical and psychological stress, such as disturbed sleep and conflicting job demands, this study intends to contribute to a better understanding of what role stressors, and to what extent these role stressors, relate to burnout complaints of professional truck drivers.

Maslach and Jackson [14] identified three components of a burnout: emotional exhaustion, depersonalization, and low personal accomplishment. Kemp et al. [1] show that job stressors have an influence on the emotional exhaustion of professional truck drivers. Even though many researchers believe that emotional exhaustion is the most central component of a burnout [15], Kemp et al. [1] recommend to examine the other two components of a burnout for professional truck drivers as well, to gain further insight regarding the impact of several job stressors on all aspects of burnout. We will therefore investigate these points that were recommended by Kemp et al. [1] and additionally whether the quality of sleep and the emotional intelligence of the dispatcher have further influence on these relationships.

2. Theoretical Background

2.1. Truck Driver Burnout

Maslach and colleagues [14,16] define burnout as a syndrome of emotional exhaustion and cynicism. A key aspect of the burnout syndrome is increased feelings of emotional exhaustion. As their emotional resources are depleted, workers feel that they are no longer able to give of themselves at a physiological level. Another aspect is the development of negative, cynical attitudes and feelings about one's clients, which is also called depersonalization. Such negative reactions to clients may be linked to the experience of emotional exhaustion, i.e., these two aspects of burnout appear somewhat related. A third aspect of the burnout syndrome is the tendency to evaluate oneself negatively, particularly with regard to one's work with clients, also called low personal accomplishment. Workers feel unhappy about themselves and dissatisfied with their accomplishments on the job.

These consequences of burnout are potentially very serious for staff, clients, and the larger institutions in which they interact. Maslach and Jackson [14] suggest that burnout can lead to a deterioration in the quality of care or service that is provided by staff. It appears to be a factor in job turnover, absenteeism, and low morale. Furthermore, burnout seems to be correlated with various self-reported indices of personal distress, including physical exhaustion, insomnia, increased use of alcohol and drugs, as well as marital status (e.g., [17]). These are behaviors that are also found among truck drivers who encounter occupational stressors [3].

Building on the Job Demands Resources (JDR) model [18,19], more recent research on burnout states that mainly two processes are responsible for the emergence of burnout [15]. On the one hand, the so-called motivational process refers to the preservation or even the growth of job and personal resources. This process happens when job demands do not exceed the available resources and may even help in creating new resources. Job demands can positively affect well-being when they are challenging, instead of hindering [20]. On the other hand, the so-called energetic process seems to play a more direct role in the occurrence of burnout. In this process, the job demands are exceeding the resources in such a way that energy is depleted and resources cannot be replenished anymore. This process thus leads to depletion of resources, resulting in the inability to meet (new) demands, lowered well-being, and burnout [21]. Job demands that are known to be potentially harmful in this sense can range from interpersonal conflicts to job insecurity [20], also including role stressors. Important role stressors in the literature are role conflict and role ambiguity [22].

2.2. Role Conflict and Role Ambiguity

Stress literature has a long history in understanding the relationships between stressors and performance and functioning at work (see e.g., [23]). A meta-analytic study of LePine et al. [24] put suggested that work stressors can be conceived as hindrances or challenges, for which different outcomes can be expected in terms of resulting strains, such as burnout. From the JDR perspective literature, Van den Broeck et al. [20] also differentiate between job hindrances (such as role ambiguity, constraints, and interpersonal conflicts) and job challenges (such as a challenging workload and cognitive demands) and confirmed different types of outcomes for the these two types of demands amongst call center agents and police officers. More specifically, especially job hindrances were positively related to burnout, whereas job challenges were in this case not.

Role conflict can be defined as “the simultaneous occurrence of two or more sets of pressures in the working environment, or the incompatibility of expectations associated with a role” ([1] (p. 36) citing [25,26]). Role ambiguity is “the degree to which insufficient clear information exists about the expectations associated with a role, including protocol for fulfilling role expectations, or consequences of role performance ([1] (p. 36) citing [22,27]). Professional truck drivers experience many challenges in performing their jobs. Drivers must meet the needs of different stakeholders, such as their company, shippers, and receivers. At the same time, they need to address and comply with safety regulations as well. An example of role conflict is when a driver is out of hours (safety regulations), but his dispatcher wants him to deliver the goods anyway. Role ambiguity can occur when a shipper wants a driver to unload his freight on different locations on the premises, but the driver needs to first contact the dispatcher for such simple tasks [1].

Kemp et al. [1] were the first to study the relationship between role conflict and role ambiguity (job hindrances) on the one hand, and emotional exhaustion that is experienced by truck drivers on the other hand. In short, the results indicated that role conflict was positively associated to emotional exhaustion, but role ambiguity was not. Although the research by Kemp et al. [1] took place in the United States (U.S.), we argue the theoretical arguments based on the JDR model will hold for our Dutch truckers as well. Therefore, our first hypotheses are:

H1. *There is a positive relationship between role conflict and emotional exhaustion among truck drivers.*

H2. *There is a positive relationship between role ambiguity and emotional exhaustion among truck drivers.*

However, emotional exhaustion is only one of the components of a burnout. Little is known about role stressors and the other components of a burnout for truck drivers. As role conflict refers to conflictual demands on the job, one can argue this is activating an extra need for and use of energetic resources to obtain the goals on the job as needed [15]. This is because meeting these goals is more complicated or literally more demanding. Therefore, it might not only deplete the resource, but also stimulate the development of more negative, cynical attitudes and feelings about one’s clients and other stakeholders that need to be served. This is also called depersonalization. In similar vein, we can also

imagine this process is hampering ones' accomplishments. Indeed, Kelloway and Barling [28] showed in their study among 720 hospital employees that both emotional exhaustion and depersonalization were predicted by role ambiguity and role conflict.

Role ambiguity refers to unclear job demands [22]. This means that the truck driver might experience more room for own interpretation of what is needed to do, but, on the other hand, it can make the truck driver less secure on what to do to accomplish his job demands. This might lead to more cynical attitudes and feelings, as well as a negative influence on the actual (perceived) personal accomplishments on the job. Therefore, we hypothesize the following:

H3. *There is a positive relationship between role conflict and depersonalization among truck drivers.*

H4. *There is a positive relationship between role ambiguity and depersonalization among truck drivers.*

H5. *There is a positive relationship between role conflict and low personal accomplishment among truck drivers.*

H6. *There is a positive relationship between role ambiguity and low personal accomplishment among truck drivers.*

2.3. Truck Drivers' Quality of Sleep

Sleep is restorative for daily functioning, whereas sleep deprivation seems to make us more sensitive to emotional and stressful stimuli and events [29]. Recent evidence on sleep deprivation and car driving indicates its potential influence on all aspects of truck driver functioning and well-being [3]. Sersland and Natarajan [30] showed that the mental and physical well-being of long-haul drivers, such as extreme schedules causing sleep deprivation, poor dietary habits, and loneliness, can and do take a toll on the health of drivers. In this sense, poor sleep can become an additional role stressor, or job hindrance, which comes with the truck driving job, and can have a positive association with burnout [12]. Additionally to its direct effect, we argue that the quality of sleep can have a moderating effect on the relationship between different role stressors and the components of burnout. Reasoning in line with what happens during the energetically depleting process from the JDR model [15], it can be argued that sleep deprivation, contrary to a good sleep, will have a strengthening effect on the relations between different job related role stressors and the components of burnout, whereas a good sleep can help in mitigating the negative impact of role stressors. In other words: it makes a difference when you sleep well. We therefore formulate the next, moderating influence of sleep quality:

H7. *An overall good sleep quality has a negative influence on the relationships between role stressors and the components of burnout.*

2.4. Perceived Emotional Intelligence of the Dispatcher

In the past years, scientific literature has reflected particular interest in the study of individual differences in the ability to process and utilize emotional information [31]. This perspective underlies the hypothesis that people who are capable of expressing and understanding emotions, of assigning meaning to emotional experience, and of regulating their feelings, will be better adjusted psychologically and socially [32]. Such abilities have been conceptualized in general under the term emotional intelligence [33].

Keller [34] showed that highly responsive dispatcher behavior toward drivers influences drivers in developing similar behavior and relationships with external customers. Kemp et al. [1] stress that further research is needed to assess whether the emotional intelligence of dispatchers might also be a factor of importance for burnout symptoms among drivers. It could be that the emotional intelligence of the dispatcher acts as a moderating variable in the relationship between role stressors and the components of a burnout among truck drivers. In line with the insight that job demands and resources are considered to interact as well [19], a job resource may help in the weakening or buffering of the negative effect in depleting job demands (job hindrances or role stressors). We argue that emotional

intelligence of the dispatcher can play such a buffering role. A perceived poor emotional intelligence of the dispatcher, on the other hand, could further strengthen these negative relationships. Hence, we hypothesize:

H8. A high perceived emotional intelligence of a dispatcher has a negative influence on the expected relationships between different role stressors (i.e., job hindrances in terms of role conflict and role ambiguity) and the components of a burnout.

In all, the relationships between the concepts of this study can be summarized in the conceptual model that is presented in Figure 1. Drawing on JDR literature and stress research, the aim of this study is to investigate the relationship between job related role stressors (role ambiguity and role conflict) and three components of burnout (emotional exhaustion; depersonalization; low personal accomplishment), among professional truck drivers who are based in the Netherlands. Furthermore, we will analyze whether the quality of sleep and perceived emotional intelligence of the dispatcher influence these relationships between role stressors and components of burnout.

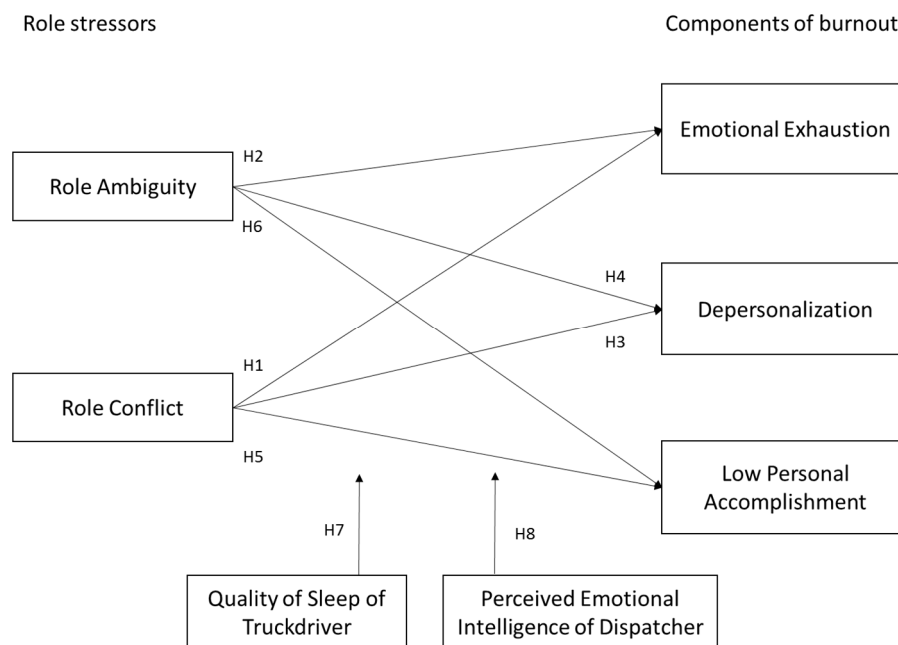


Figure 1. Conceptual model.

3. Methodology

3.1. Data Collection and Response

For this study, we needed to collect data from a large number of truck drivers. Per truck driver, we needed to ask several questions regarding the role stressors, the components of a burnout, the quality of sleep, and the emotional intelligence of the dispatchers. Each of these constructs is measured with multiple questions. We used a two-wave time-lagged design [35], with a time lag of two months. Although one may argue that two months is a relatively short time lag to detect ‘real’ causal effects, it is theoretically rather difficult to determine an optimal time lag for the effects of work characteristics on health related outcomes [36]. As the current study concerns, we merely aim to test the causal direction, as reflected by our model. We will therefore take the relatively short time lag into account as a possible methodological constraint when interpreting the results.

The research population for this study are professional truck drivers in the Netherlands. A requirement for the target population is that they speak Dutch and they use one of the social networks, are a member of the trucker forum, or read the news sites/truck driver magazines. In

all cases anonymity was guaranteed and the truck drivers were informed that the questionnaires would not be shared with anyone in their company. In the case that both surveys are filled completely, a respondent could win a €25 gift card for time and effort.

A request to participate was posted on several Dutch truck driver Facebook pages, such as Benelux Chauffeurs (2275 members), SamenSterk in Transport 2 (11,517 members), and Scandinavietruckers (17,949 members). A big Dutch Trucker magazine Truckstar posted the request on the front page of their website and Facebook (71,145 members) and several transport related news sites that were posted the request.

We collected responses from 534 truck drivers, 427 of whom indicated to be available for the second wave. 214 drivers of whom completed the survey for the second time. Comparing the groups from T1 and T2 revealed no significant differences as regarding their demographics. In the first wave (T1), data on the possible causes of burnout was collected, such as role conflict, role ambiguity, quality of sleep, and the perceived emotional intelligence of the dispatcher. The Dillman Total Design Survey Method [37] was used to increase our response rate for the second wave. Two months after the first survey was filled out, an e-mail was sent to the truck drivers to inform them regarding the second survey (T2). In case the driver did not complete the survey, a reminder was sent, stressing the importance of the study and the possibility to win the gift card. If the driver did not respond after this reminder, a final reminder was sent including a date when the response was expected. In the second wave the three elements of burnout were measured; emotional exhaustion, depersonalization and low personal accomplishment. This means that for the possible causes for burnout measured at T1 we could measure the relationship with the three components of burnout at T2.

In the second wave, there were also a question included about issues that might cause stress on the job, based on the open question information from the first wave. The respondent could answer on a Likert scale 1–6, with 1 meaning ‘completely disagrees’ and 6 meaning ‘completely agrees’ with the item causing stress.

3.2. Measures

All the questions of our survey were translated into Dutch, if not yet available, using the forward-backward translation method. During the pre-test, we identified that the wording of some questions needed to be changed and some questions removed to have a better fit with our research population. More specifically, the questionnaire was reviewed by five truck drivers to find out whether the questionnaire was understood. Each of them was interviewed after they completed the questionnaire. This test was valuable because of the feedback that was given and the additional indications of stressors for truck drivers. After this pre-test, the wording of some questions was changed. Also, some questions with regard to working with colleagues or the boss were removed. The drivers felt that, most of the time, they do not work together with their colleagues, but do their job on their own.

Burnout was measured by a translated and adapted version of scale for truck drivers of Kemp et al. [1], which was based on Singh et al. [26]. Items were adapted for truck drivers to include statements about loading and unloading locations, employees at loading/unloading location, etc., rather than nonspecific recipients. In this way, five items were presented on *emotional exhaustion*. An example item is: ‘I feel emotional exhausted by external strain that is put on me’. Four items were presented on *depersonalization*. An example item is: ‘I feel indifferent towards some of the colleagues on (the loading) location’. Six items were presented for *low personal accomplishment*. An example item is: ‘I think I have a positive influence on my work’. All items were measured on a six-point scale, with scores from 1 = completely disagree to 6 = completely agree.

Role conflict. Consistent with Kemp et al. [1], we used the eight items to measure role conflict adapted from the measure of Rizzo et al. [25]. The measure includes items on role conflict and role ambiguity. During the pre-test, the questions for role ambiguity, such as ‘I feel certain about how much authority I have’, ‘Clear, planned goals and objectives exist for my job’, ‘I know exactly what my

responsibilities are', and 'I know exactly what is expected of me' were perceived as asking the same repeatedly in a short time. All of the drivers recommended the removal of two of these questions in order to avoid the loss of attention. Therefore, 'Clear, planned goals and objectives exist for my job' and 'I know exactly what my responsibilities are' have been removed. This leaves three of the original five items to measure role ambiguity. All items are measured on a seven-point Likert scale, with scores from 1 = completely disagree to 7 = completely agree.

Perceived emotional intelligence of the dispatcher. Wong and Law [38] developed a validated scale to measure emotional intelligence based on the definition from Salovey and Mayer [39]. This scale consists of four sub scales: Appraisal and expression of emotion in the self (self-emotional appraisal (SEA)), appraisal and recognition of emotion in others (others emotional appraisal (OEA)), regulation of emotion in the self (regulation of emotion (ROE)), and the use of emotion to facilitate performance (use of emotion (UOE)). In this study, we want to validate the perspective of the driver on the emotional intelligence of the dispatcher. Therefore, we will use the four items to measure OEA and two items for ROE and then ask the drivers how the dispatchers score on these items. An example item for OEA is 'the dispatcher is sensitive for the feelings and emotions of others. An example item for ROE is 'the dispatcher can control his own emotions well'. All of the items are measured on a seven-point Likert scale, with scores from 1 = completely disagree to 7 = completely agree.

Quality of sleep. Questions from the Karolinska Sleep Questionnaire [40] are used to measure sleep quality. During the pre-test, the drivers indicate that, if they are sleeping alone in the truck, it is difficult to identify whether one is 'snoring loud and embarrassingly' and 'has periods with breathing pauses during the night'. These questions have been removed. The questionnaire contains questions regarding how often certain sleep problems occur. The chosen period for these sleep problems is aligned with the time-lag. An example item of the scale is 'having difficulties falling asleep'. All items have been measured on a six-point Likert scale, with scores from 1 = never to 6 = always.

Other causes of stress. During the interviews in the pre-test and with the open feedback possibility in the survey, several drivers informed us about the possible causes for their stress. These possible causes are in line with indications from Crum and Morrow [2] for driver fatigue, the occupational stressors reported by Shattell et al. [3], and indicators reported by Kemp et al. [1]. In the second wave, ten of these most common causes were measured to identify whether these causes are incidents or structural. The top 10 causes of stress identified by the truckers are:

1. Aggression of other road users
2. Finding an suitable resting place
3. Enforcement of driving hours
4. Implementation of the digital tachograph
5. Different safety regulations on loading and unloading locations
6. Length of working day
7. Automation (GPS, Planning software, etc)
8. Dispatcher considering private situations (be home in time)
9. Afraid of losing job to a cheaper driver
10. Insufficient aid on loading and unloading locations

3.3. Data Analysis

We started by analyzing the quality and cleaning of the received data in Excel. Items for role conflict and ambiguity, quality of sleep and emotional intelligence of the dispatcher, and burnout elements were recoded where necessary. The Kolmogorov–Smirnov and Shapiro–Wilk test showed normal distributed data.

Descriptive analysis and correlation analysis were then performed with SPSS. The more complex analyses were done using structural equation modeling (SEM) [41]. The software used for SEM is SmartPLS [42]. According to Hair et al. [43], a popular heuristic states that the minimum sample size

for a Partial Least Squares (PLS) model should be equal or larger than ten times the largest number of formative indicators used to measure one construct, or ten times the largest number of inner model paths directed at a particular construct in the inner model.

In our case, we have a sufficient 214 full responses available for our study. Not surprisingly, for this work field, 93% of the responses were from men and 7% were from women. Age ranged from categories 20–29 years (18%), 30–39 years (21%), 40–49 years (34%), 50–59 years (21%), and 60 or older (7%). Of the respondents, 27.6% worked in regular shifts, 30% in morning shifts, 29% in day shifts, 25% in evening shifts, and 16% during the night.

4. Results

4.1. Descriptives and Correlations

Descriptives and correlations of all variables in this study are presented in Table 1. As can be seen from the table, the role stressors correlate with each other in an expected (positive) direction. Moreover, all of the stressors seem to be associated with all three elements of burnout as well, except for emotional intelligence of the dispatcher with emotional exhaustion. Rather plausible, the elements of burnout correlate among themselves as well. The Variance Inflation Factor (VIF) has been calculated to determine the multicollinearity between the constructs for our model. VIF values appear far below 5.0, which indicates no signs for multicollinearity.

Not included yet are the scores on the top 10 causes of stress for truck drivers. These stressors were identified at T1 and were measured on a six-point Likert scale (from 1 = completely disagree to 6 = completely agree) at T2, accompanied by the following statement in the survey: 'The following aspect caused me work stress: ...'. The results can be found in Table 2.

Table 1. Means, Standard Deviations, and Correlations for all variables in the study (N = 214).

Variables	Mean	SD	1	2	3	4	5	6	7	8	9	10	11
Role Conflict T1 (1-5)	3.51	1.39	-										
Role Ambiguity T1 (1-5)	3.12	1.17	0.47 *	-									
(Low) Quality of Sleep T1 (0-6)	2.75	0.94	0.49 *	0.37 *	-								
(Low) Perceived EQ Disp T1	3.87	1.47	0.58 **	0.50 **	0.45 **	-							
Age in years	42.13	11.68	0.03	0.08	-0.02	0.17 *	-						
Gender (male = 1; female = 2)	1.07	0.25	0.14	-0.06	0.10	0.02	-0.15 *	-					
Partner	1.16	0.37	-0.01	-0.08	-0.00	-0.06	-0.39 **	-0.26 **	-				
Children	1.43	1.16	-0.13	-0.03	-0.08	0.01	0.48 **	-0.22 **	-0.36 **	-			
Regular work shifts	1.72	0.45	0.06	0.08	0.11	0.08	0.05	-0.05	0.12	0.14 **	-		
Depersonalization T2	2.84	1.17	0.60 **	0.35 **	0.43 **	0.52 **	0.03	-0.03	0.02	-0.12	-0.06	-	
Diminished pers accomp T2	2.57	0.76	0.45 **	0.37 **	0.22 **	0.48 **	0.14 *	0.10	0.01	-0.07	-0.03	0.53 **	-
Emotional Exhaustion T2	3.11	1.15	0.61 **	0.37 **	0.53 **	0.08	0.02	0.05	-0.04	-0.08	0.07	0.72 **	0.41 **

(SD: Standard Deviation; * $p < 0.05$; ** $p < 0.01$).

Table 2. Top 10 causes for truck driver stress and their ratings at T2.

Nr	Possible Causes for Truck Driver Stress	N	Mean
1	Aggression of other road users	210	4.69
2	Finding a suitable resting place	194	4.53
3	Enforcement of driving hours	210	4.32
4	Implementation of the digital tachograph	206	4.07
5	Different safety regulations on loading and unloading locations	206	3.86
6	Length of working day	211	3.78
7	Automation (GPS, planning software etc.)	193	3.64
8	Planner considering private situations (be home in time)	211	3.64
9	Afraid of losing job by a cheaper driver	203	3.49
10	Insufficient aid on loading and unloading locations	199	3.45

4.2. Model Testing

4.2.1. Reliability and Validity of the Model

Smart-PLS version 3.2.6 [42] is used to estimate path coefficients of the relationships between the variables in the model. Hair et al. [43] stress that the outer model needs to be checked before the inner model can be analyzed. The most important reliability measure for PLS is ρ_A [44]; it is currently the only consistent reliability measure for PLS construct scores [45]. The ρ_A should be ≥ 0.7 to be reliable. We identified role ambiguity scores that were slightly below 0.7, although the composite reliability of role ambiguity is 0.770. Removing one of the items did not increase the score of role ambiguity, hence we decided to continue the analysis with the measure as is.

Validity is examined by testing the convergent and discriminant validity of the constructs. Support is provided for convergent validity, when each item of a construct has outer loadings >0.70 and when construct's average variance extracted (AVE) is 0.50 or higher [45]. To reach the required level of ≥ 0.50 per construct, the following items have been removed: Quality of Sleep item 5 with an outer loading of 0.537 (difficulties to wake up) and Low Personal Accomplishment item1 with an outer loading of 0.429 (I feel my supervisor values my contribution to the firm). Because of these removals, the correlations have been calculated again to test discriminant validity. The Fornell–Larcker criterion and the heterotrait-monotrait (HTMT) ratio are used [45]. The Fornell–Larcker criterion indicates that a factor's AVE should be higher than its squared correlations with all other factors in the model. In a well-fitting model, the hetero trait correlations should be smaller than mono trait correlations, meaning that the HTMT ratio should be below 1.0. Henseler et al. [45] suggest that, if the HTMT value is below 0.90, discriminant validity is established. The results of these tests can be found in the Tables 3 and 4, showing that the constructs pass both tests.

Table 3. Internal validity: Fornell–Larcker.

Fornell-Larcker Criterion (AVE)	DP	DPA	EE	PEI	QoS	RA	RC
Depersonalization (DP)	0.832						
Diminished Personal Accomplishment (DPA)	0.620	0.719					
Emotional Exhaustion (EE)	0.718	0.516	0.819				
Perceived Emotional Intelligence (PEI)	0.524	0.572	0.537	0.842			
Quality of sleep (QoS)	0.438	0.288	0.540	0.460	0.718		
Role Ambiguity (RA)	0.374	0.459	0.380	0.509	0.341	0.729	
Role Conflict (RC)	0.600	0.532	0.613	0.590	0.497	0.497	0.772

Table 4. Internal validity: heterotrait-monotrait (HTMT) for the total model.

HTMT	DP	DPA	EE	PEI	QoS	RA
Depersonalization (DP)	-					
Diminished Personal Accomplishment (DPA)	0.653					
Emotional Exhaustion (EE)	0.827	0.507				
Perceived Emotional Intelligence (PEI)	0.584	0.576	0.585			
Quality of Sleep (QoS)	0.488	0.294	0.595	0.508		
Role Ambiguity (RA)	0.502	0.583	0.505	0.689	0.497	
Role Conflict (RC)	0.677	0.544	0.680	0.642	0.552	0.658

4.2.2. Assessing Structural Model Results–Path Coefficients

Henseler et al. [46] recommend using 4,999 bootstrap samples, because this number is sufficiently close to infinity for usual situations, is tractable with regard to computation time, and allows for the unanimous determination of empirical bootstrap confidence intervals. Following this procedure, the resulting significant path coefficients are shown in Figure 2, representing the empirically validated model for the study.

As can be seen from Figure 2, the significant paths all refer to direct effects. These indicate positive relationships between role stressors on the one hand (T1) with components of burnout (T2). Predictive accuracy for our outcome variables (in R^2) indicates a moderate level of accuracy, with values between 0.40 and 0.50 [43]. Conclusions on our hypotheses are summarized in Table 5.

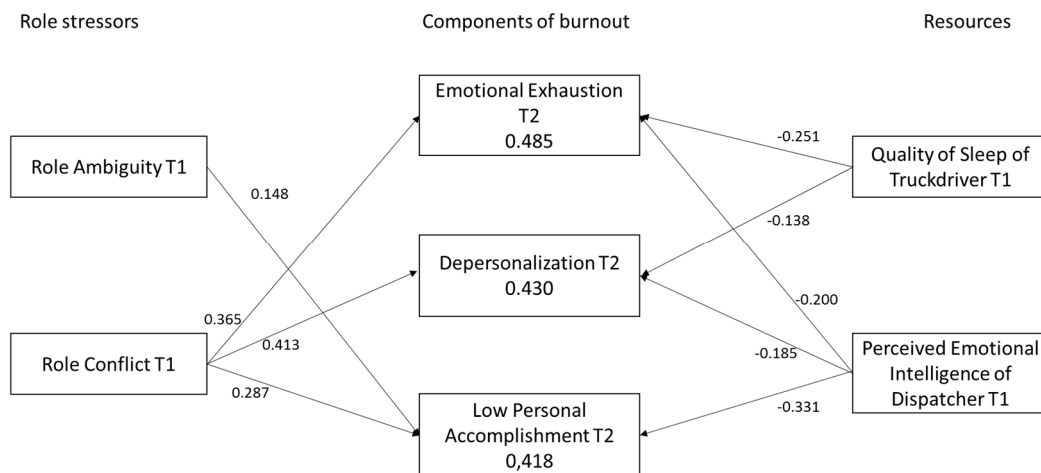


Figure 2. Empirically validated model.

Table 5. Summary for hypotheses tested.

Hypotheses	T Statistics > 1.96	p Values < 0.05	Significance
H1: Role Conflict -> Emotional exhaustion	4.779	0.000	Supported
H2: Role Ambiguity -> Emotional exhaustion	0.245	0.806	Not supported
H3: Role Conflict -> Depersonalization	5.253	0.000	Supported
H4: Role Ambiguity -> Depersonalization	0.331	0.741	Not supported
H5: Role Conflict -> Low personal accomplishment	3.802	0.000	Supported
H6: Role Ambiguity -> Low personal accomplishment	2.121	0.034	Supported
H7: Quality of Sleep moderating effect	<1.96	>0.05	Not supported
H8: Perceived Emotional Intelligence of Dispatcher moderating effect	<1.96	>0.05	Not supported

Our results appear confirmative for hypotheses 1, 3, 5, and 6. Hypotheses 2 and 4 on the direct effects of role ambiguity on, respectively, emotional exhaustion and low personal accomplishment could not be confirmed. Hypotheses 7 and 8 on the moderating effects of a good quality of sleep and the perceived emotional intelligence of the dispatcher in the relations between role stressors and components of burnout could not be confirmed either. However, as indicated by the model in Figure 2, the direct effects are found for these factors.

5. Conclusions, Discussion, and Recommendations

5.1. Conclusions

The goal of this research has been to determine the relationship between role stressors or job hindrances (i.e., role conflict and role ambiguity) for truck drivers on the one hand and their experience of the three components of burnout on the other hand. The study was conducted with a sample of 214 Dutch professional truck drivers in a two month time-lagged design. The results indicate that the relations between the constructs role conflict and perceived emotional intelligence of the dispatcher as antecedents measured at T1 and depersonalization and low personal accomplishments as outcomes concerning burnout measured at T2, all appeared to be significant. For role ambiguity, the relationship with emotional exhaustion and depersonalization appeared not significant, only a relationship with low personal accomplishment came forward, at a modest 0.10 significance level.

The expected moderating effects regarding quality of sleep and perceived emotional intelligence of the dispatcher were not significant. Instead, perceived emotional intelligence revealed a direct significant impact on all components of burnout. Quality of sleep appears to have a significant impact on two out of three components of burnout.

Additionally, the top three stressors that were reported in the second wave appeared to be the following: aggression of other road users, finding a suitable parking place, and enforcement of driving hours. These are all related to the trucking industry in general, rather than being related to a particular employer.

5.2. Discussion

The results of this study support that truck driver role conflict is positively related to the three aspects of a burnout, and truck driver role ambiguity is only positively related to low personal accomplishment. These findings are confirmative for the energy depleting process described in the JDR model [15], by which the relation between job demands, more specifically job hindrances [20] and burnout is explained. Our results did not support the relationships between role ambiguity and the two other components of burnout, i.e., emotional exhaustion and depersonalization. The relationship between role ambiguity and emotional exhaustion has been studied among truck drivers earlier by Kemp et al. [1], and this study had a comparable outcomes for American truck drivers, i.e., role ambiguity could not reveal negative effects. Consistent with Kemp et al. [1], this study used a global construct for role ambiguity. Singh [27] suggested that moderate levels of role ambiguity (as we also found in this study) may help individuals to find creative ways to manage unclear role demands. From this perspective, this stressor then acts as a so-called job challenge instead of a job hindrance [27]; it might help to create some room for workers to solve it their own way. However, in the context of truck driving, one can question this amount of available room to do things your own way. An alternative explanation may therefore be that role conflict is more relevant to, and has more impact on, truck driver experience than role ambiguity. King and King [47] and Singh [27] further suggest that role ambiguity is multifaceted in nature. It might be that, if a multifaceted construct is used for role ambiguity, its relationships with emotional exhaustion and depersonalization would become significant and more consistent with other research.

As regards the effects of quality of sleep, we found that it does not make a difference for the relation between the other role stressors and components of burnout. However, it has an impact of its own. When considering its importance for truckers, as well as its large societal impact in terms of safety on the road [48], the relevance of good sleep should be further acknowledged and analyzed. Poor quality of sleep or sleep deprivation makes us more sensitive to emotional and stressful stimuli and events [29]. In addition, Vela-Bueno et al. [12] found that there are sleep complaints present among burnout subjects. Given the fact that too little sleep (<6 h) is a main risk factor for burnout [49], the role of quality of sleep should be further investigated. It might also be a mediator in the relations between role stressors and components of burnout. If occupational stress can hamper the quality of sleep [13], this decreased quality of sleep can even increase the resulting burnout complaints.

The perceived emotional intelligence of dispatchers appeared to have a direct impact on the experience of burnout complaints by truckers. It might therefore play an important role as a possible job resource that helps truckers to meet the demands of their job. Or, if absent, or being perceived at a low level, the lack of emotional intelligence might become a job hindrance or an extra role stressor itself. Although it cannot make the difference in negative relationships that already exist between different role stressors and burnout, its direct relevance for all three components of burnout for truckers is salient. It is already known that the behavior of dispatchers has an impact on the behavior of truck drivers. This has also been linked to the intention to quit a company [34,50,51] and to behaviors to customers [34]. The importance of the behavior of dispatchers for the wellbeing of truckers therefore deserves further attention as well, in order to pursue better truck driver work conditions.

During the interviews and with the open feedback possibility, several drivers informed us regarding the possible causes for their stress. These possible causes are in line with indications from Crum and Morrow [2] for driver fatigue, the occupational stressors that were reported by Shattell et al. [3] and indicators reported by Kemp et al. [1]. In the second wave, 10 of the most common causes were measured to identify whether these causes are incidental or more structural. It seems that the top three stressors, e.g., aggression of other road users, finding a suitable resting place, and enforcement of driving hours, are all commonly experienced aspects of the job. These will most likely not differ if a truck driver switches from company. Consequently, these stressors an important for the whole industry, to further examine and pay attention to.

5.3. Practical Implications

In all, truck drivers have no easy job. In light of their sustainable employability and a sustainable workforce for the logistics sector, more attention for truck driver well-being is strongly recommended. As regarding the possibilities for truckers' own strategies to cope with the risk of a burnout, we recommend that truck drivers learn to especially regulate the role conflict elements of the job. Role conflicts for truck drivers relate to the different priorities that their stakeholders have and the need to serve both and even all demands. It may therefore be helpful to talk with other truck drivers rather informally (live or via social media channels) regarding *how* they prioritize their demands, for what reasons, and with what consequences. In this way, truckers can learn from each other what priorities really prevail to fulfill the demands of the job, and find some social support. Another suggestion would be to take the role that conflict risks more formally into discussions at work, with the direct supervisors, to learn how they are expected to deal with the diverse demands formally, and to create a mutual understanding of this professional problem that 'comes with the job'.

Concerning how different stakeholders can cope with truck driver burnout risk, LeMay et al. [52] suggest that it seems that long-haul drivers push themselves into burnout, and then drop from the firm or exit the industry for a while, or entirely. Our study finds that the top three stressors for truck drivers (aggression of other road users, finding a suitable resting place and enforcement of driving hours) are industry related and therefore require collective action to prevent that drivers feel the need to leave the industry.

To reduce the aggression of other road users, the government could make people more aware about their own driving style via commercials, billboards, and/or be stricter on the enforcement of acceptable driving behavior. Another possibility would be to pay more attention to road aggression in the training/education for all occupations involving driving.

Finding a suitable resting place, the enforcement of driving hours, and the implementation of the digital tachograph seems to go hand in hand, and may even *deteriorate* the quality of truck driver sleep, instead of preserving it. Several drivers reported that it is becoming more and more difficult to find a suitable resting place, they are constantly on the clock, and if they exceed their driving times by one-minute, which is shown on the digital tachograph that the police officers are forced to give a fine. Providing more parking space for truck drivers might reduce these stressors.

As we found, sleep as such has a direct impact on two out of three components of a burnout. Only 27% of the drivers worked in regular shifts, which allows for a regular sleeping pattern. As suggested by Adams-Guppy and Guppy [53], working in regular shifts allows for a better sleeping pattern, which reduces fatigue problems. Also, the offering of *secured* parking facilities could allow for truck drivers to sleep better, when they know that they themselves, the truck, and the cargo are safe.

Given the direct impact of the emotional intelligence of the dispatcher as well, we recommend to use this knowledge to further facilitate a more flexible approach in managing the scheduling and sequencing of deliveries, still in line with the recommendations Adams-Guppy and Guppy [53]. It can help drivers in managing their own fatigue problems by taking appropriate breaks. In addition, management could offer training for the existing dispatchers to improve and optimize their behavior towards drivers. Moreover, the amount of drivers per dispatcher should be kept manageable, as the dispatchers might become less patient and pay less attention to the drivers needs and concern if they are too busy. Hiring policies for (new) dispatchers could also take the emotional intelligence into consideration as a possible criterion.

Finally, truck drivers reported that, if they are under stress due to, for example, finding a suitable parking place, need to be in time on a location for a customer, or catching a train/boat, they are aware that they start to drive aggressively as well. If this awareness would turn into action to not drive aggressively, it would improve the situation on the road.

5.4. Limitations and Recommendations for Further Research

Although this research makes important contributions to the study of role stressors and burnout among truck drivers, future studies might take several shortcomings of the current study into account and follow different directions.

First, further assessment of the impact of role ambiguity could be done differently. In our research, role ambiguity is measured as one construct following Kemp et al. [1]. However, several researchers [27,47] suggest that role ambiguity is multifaceted in nature. By measuring role ambiguity as a multifaceted construct, a better understanding of the impact among truck drivers can be gained.

Second, the role of sleep quality should be further understood: for example, a mediating effect of sleep in the relationship between role stressors and burnout is plausible, and it needs further examination. After all, role conflict and role ambiguity are found to impair sleep [54], and sleep complaints are common for burnout victims [12].

Additional studies might also examine the effectiveness of suggested practical recommendations regarding sleep quality. Thus, intervention studies can be valuable; for example, on the effects of the introduction of a regular work schedule on sleep quality, or training of dispatchers for their interaction with truck drivers. More in depth insights could be gained from qualitative research into role stressors for truck drivers to further understand the importance and interrelatedness of the relevant stressors in their job. Finally, quantitative designs with more measurements over time, as well as larger time lags will help in further understanding our results for longer term outcomes.

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