Truck drivers' burnout

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The influence of role stressors on the three components of a burnout

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Preface and acknowledgements

This research is my last step in completing my Master of science degree in management. Hereby ends an interesting and challenging period that taught me to think on an academic level. It was very interesting to learn more about the impact of role stressors on the components of burnout for truck drivers.

I would like to thank my supervisor Dhr. dr. J. Semeijn for the quick responses, right help and support during my graduation project and Mw. dr. J.H. Semeijn for her valuable comments and feedback. I also would like to thank my mother Marian Beugelink who always supported me. Furthermore, I would like to thank my brother Mike de Waard and colleague Mathijn Retel Helmrich for their valuable comments on my drafts.

My academic career at the Open University was very useful and informative, however I am also very pleased to close this chapter.

Thanks again and I hope you enjoy reading,

Barry de Waard

Summary

The biggest challenge in the road transport sector in 2017 is driver shortage (Logistiek.nl). RTL Nieuws reported in October 2015 that social partners in the transport sector and the minister of social affairs created a plan for the trucking industry. Part of the plan is to offer 2000 people an education and job in the trucking industry in 2017. Several topics have already gained a lot attention from researchers, such as truck driver retention, truck driver health and safety.

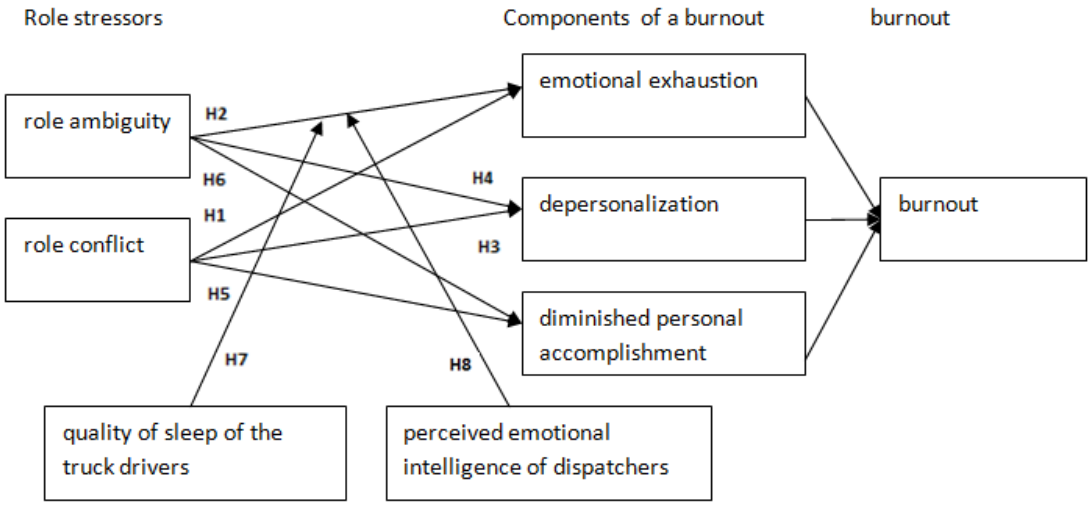
Professional truck drivers experience many challenges in the course of performing their jobs. Drivers must meet the needs of their company, shippers, and receivers as well as comply with safety regulations (Kemp, Kopp, & Kemp, 2013).

Given the demands of their job, and despite government regulations limiting drivers' hours of service, drivers are prone to physical exhaustion (Crum & Morrow, 2002). However, in addition to physical exhaustion, professional drivers may also encounter psychological stress. Such stress can lead to emotional exhaustion. Emotional exhaustion is a component of burnout that manifests as a result of job-related stress and can impact overall job performance and retention.

Maslach and Jackson (1981) identified three components of a burnout, emotional exhaustion, depersonalization, and diminished personal accomplishments. Kemp et al. (2013) showed that job stressors have an influence on the emotional exhaustion of professional truck drivers.

Little is known about the relation between role stressors and the components of a burnout for truck drivers. Therefore, the main question in this study is: *Is there a relationship between the role stressors for a truck driver and the three components of a burnout?*

To answer this question, a literature study has been done to improve knowledge about the truck drivers, burnout, role stressors and emotional intelligence resulting in the following conceptual model:

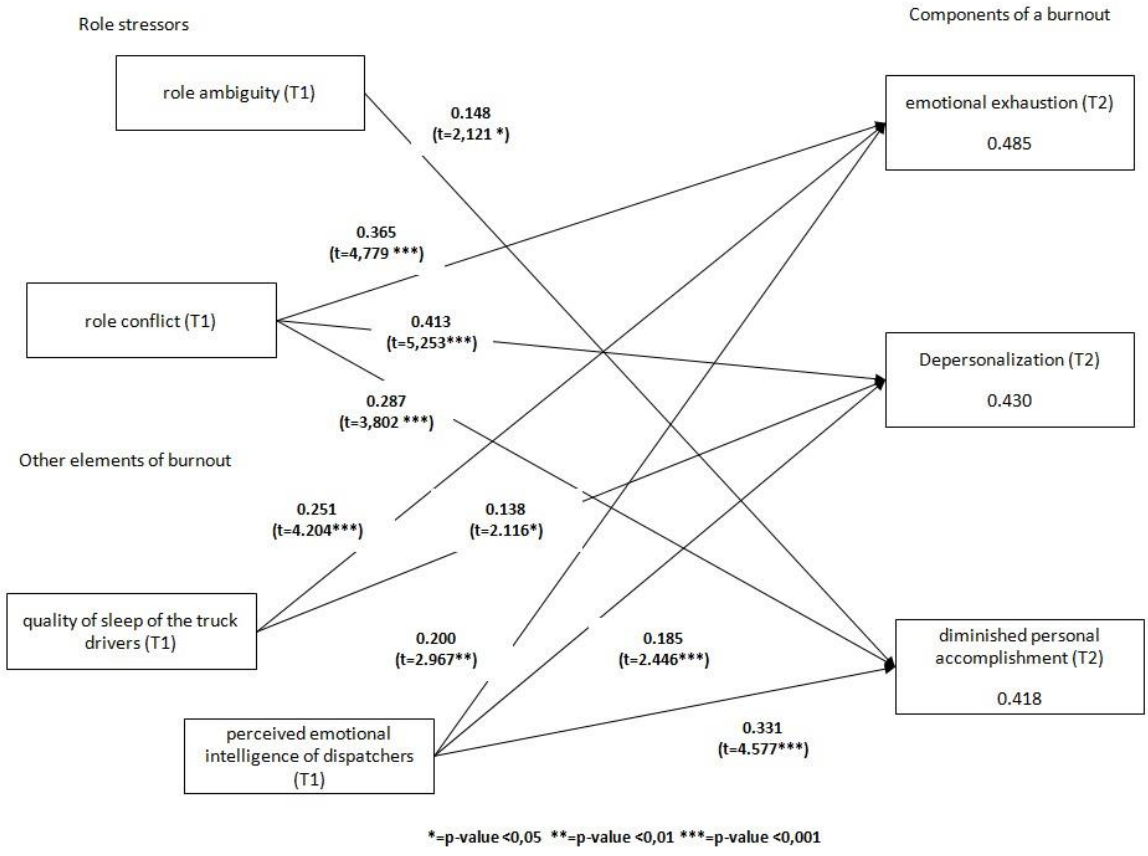


As seen in the conceptual model, this study examines the relationship between the concerning dimensions (constructs). This study will answer 8 hypotheses in total. To answer these hypotheses six constructs will be measured from the point of view of the truck driver.

The constructs used in the conceptual model were operationalized based on perceived variables or indicators. A time-lagged design has been used. In the first wave the possible causes of burnout have been measured such as 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 diminished personal accomplishment. During interviews and with open feedback possibility several drivers informed us about possible causes for their stress. These possible causes are in line with indications from Crum and Morrow (2002) for driver fatigue, the occupational stressors reported by Shattel et al. (2010) and indicators reported by Kemp et al. (2013). In the second wave 11 of the most common causes were measured to identify if these causes are incidents or structural. The interval between the lags was two months.

Smart-PLS (Ringle et al., 2015) is used to estimate path coefficients of the relationships between the variables in the model. The conceptual model satisfies the minimum criteria of a model, this means that all criteria in the model have a fit and the model is reliable. Four out of eight hypotheses meet the criteria for the p-value and the t-value. Based on our findings we show the empirically validated model.



Findings of this research indicate that role conflict in the professional trucking environment is positively related to the three components of a burnout. A poor perceived emotional intelligence of the dispatcher, who is the interface between the company and the truck driver is positively related to the three components of a burnout. Finally, a poor quality of sleep of the truck driver has a positive relation to depersonalization and emotional exhaustion.

The top three role stressors reported in the second wave, aggression of other road users, finding a suitable resting place and enforcement of driving hours are all related to the trucking industry rather than being related to the company they work for. The government and transport companies could invest in those elements to reduce stress by truck drivers.

Additional studies might examine the effectiveness of improving quality of sleep or perceived emotional intelligence of the dispatcher. One could for example do a case study with time lag where between T1 and T2 a mediating effect takes place. For example, a training for dispatchers or the introduction of a more regular schedule for the truck drivers.

Key words:

Truck drivers, role stressors, burnout, perceived emotional intelligence, quality of sleep

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1. Introduction

In this chapter the motivation of this study will be discussed, as well as the problem statement, the research approach and the contribution.

1.1 Truck drivers' burnout

In 2011 TLN (Transport Logistiek Nederland) and the EVO (logistics business association) calculated that the transport sector will lack about 55.000 truck drivers and logistics employees due to people that will retire (Logistiek.nl). Driver shortage is not only expected in the Netherlands but also in the U.S. According to a new analysis by the American Trucking Associations (2015), the shortage of truck drivers has grown to nearly 48.000 in the U.S. and could expand further due to industry growth and a retiring workforce (supplychain247.com).

Professional truck drivers experience many challenges in the course of performing their jobs. Drivers must meet the needs of their company, shippers, and receivers, as well as comply with safety regulations (Kemp, Kopp, & Kemp, 2013).

Given the demands of their job, and despite government regulations limiting drivers' hours of service, drivers are prone to physical exhaustion (Crum & Morrow, 2002). However, in addition to physical exhaustion, professional drivers also encounter psychological stress. Such stress can lead to emotional exhaustion. Emotional exhaustion is a component of burnout that manifests as a result of job-related stress and can impact overall job performance and retention. In the occupational literature, there is evidence that links boundary spanning employees (e.g., salespeople and customer service representatives) to emotional exhaustion (Singh, Rhoads, Goolsby & Rhoads, 1994). These issues have been associated with high-pressured professions, including physicians (especially surgeons), air traffic controllers, policemen, and astronauts (Ahler, 2007). In these professions, individuals may be involved in prolonged critical decision making, interpersonal contact, care giving, or extended isolation. However, some research has empirically investigated emotional exhaustion of professional truck drivers (Lemay, Taylor & Turner, 1993). Occupational stress is associated with disturbed sleep (Ota, Masue, Yasuda, Tsutsumi, Mino & Ohara, 2005). Sleep complaints are present in burnout subjects (Vela-Bueno, Moreno-Jiménez, Rodríguez-Muñoz, Olavarrieta-Bernardino, Fernández-Mendoza, De la Cruz-Troca, & Vgontzas, 2008).

Maslach and Jackson (1981) first identified three components of a burnout, emotional exhaustion, depersonalization, and diminished personal accomplishments. Kemp et al. (2013) 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 (Boles, Johnston and Hair, 1997; Babakus, Cravens, Johnston and Moncrief, 1999) Kemp et al. (2013) recommend to also examine the other two components of a burnout for professional truck drivers, to gain further insight in the impact of several job stressors on all aspects of burnout. In this paper, we will investigate the points recommended by Kemp et al. (2013) and whether sleep problems or the emotional intelligence of the dispatcher have an influence on these relationships. This leads to the following problem statement.

1.2 Problem statement

Is there a relationship between the role stressors for a truck driver and the three components of a burnout?

The sub-questions that will be addressed are:

- How are role-stressors impacting the emotional exhaustion of a professional truck driver?
- How are role-stressors impacting the depersonalization of a professional truck driver?
- How are role-stressors impacting the diminished personal accomplishment of a professional truck driver?
- Has the perceived emotional intelligence of the dispatcher an effect on the role stressors and the components of burnout for a professional truck driver?
- Do sleep problems of the truck drivers have an effect on the role stressors and the components of burnout for a professional truck driver?

1.3 Research method

This research includes a literature study to obtain more background information for forming the hypotheses and a conceptual model and to create a questionnaire to collect the data for testing the hypotheses. This questionnaire is submitted for a pre-test to five drivers who have answered all questions.

The questionnaires were administrated through an online survey, through various social networks, such as Facebook, trucker forums etc., and transport related news sites, such as transportpers.eu, ttm.nl, etc. This study utilizes a two-wave time-lagged design (Ployhart & Vandenberg, 2010) with an interval of two months.

Finally, the data is analyzed and conclusions are drawn. With the use of structural equation modeling (PLS), the hypotheses were tested based on the data obtained.

1.4 Contribution

Previous research by Kemp et al. (2013) emphasized how role stressors can act as a source of frustration and strain from which a debilitating state, such as emotional exhaustion, develops. Our study examines whether job stressors also have a relationship with depersonalization and diminished personal accomplishments. Furthermore, our study investigates whether the emotional intelligence of a dispatcher or sleep problems have a moderating effect on the relationship between role stressors and all three components of a burnout.

Awa, Plaumann and Walter (2010) reviewed intervention programs to prevent burnout. Our study shows how role stressors are impacting the daily life of a truck driver and that these can lead to a burnout. Dispatchers and managers can make the necessary adjustments to reduce role stressors for truck drivers, which reduces the chance of a burnout for truck drivers.

1.5 Reading guide

The next chapter starts with a literature review. It describes the literature about truck drivers, burnout, role stressors and emotional intelligence. Hypotheses will be formulated and the chapter concludes with a conceptual model. The third chapter describes the methodology, by explaining the research design, data collection and operationalization of the study. The results and analysis of this study will be presented in chapter four, after which the results are further examined in chapter five where conclusions will be drawn. At the end of this chapter, restrictions, theoretical and practical implications are given and we will conclude with recommendations for further research.

2. Literature Review

In this chapter, a theoretical background of the current research will be presented. The goal of this background is to define the concepts from the problem statement and discuss the various constructs used. There will be a closer look at truck drivers, burnout, role stressors and emotional intelligence.

2.1 Truck drivers

Driver shortage is reported by several sources such as TLN (Transport Logistiek Nederland) and the EVO (logistics business association). The biggest challenge in the road transport sector in 2017 is driver shortage (Logistiek.nl). RTL Nieuws reported in October 2015 that social partners in the transport sector and the minister of social affairs created a plan for the trucking industry. One of the plans is to offer 2000 people an education and job in the trucking industry in 2017. Several topics already have gained a lot attention from researchers such as truck driver retention, truck driver health and safety.

Driver retention

A number of authors have identified the problem as not only a driver shortage, but also as one of “churning”, as drivers move from company to another within the same truckload segment of the industry (Keller & Ozment, 1999; Williams, Garver & Stephen Taylor, 2011).

LeMay et al. (1993) found that earlier studies showed that drivers regard pay and time home as much less important than managers apparently believe. Substantial evidence suggests that recognition for performance, management attitude towards drivers and personal involvement with drivers affect retention and turnover in important ways. Consistent with previous research Keller (2002) investigated that, the greater the efforts of dispatchers to help drivers completely resolve concerns, the lesser the turnover among drivers. Contradicting the findings from LeMay et al. 1993, Keller (2002) and Williams et al. (2011) identified that driver pay is an important antecedent variable.

Keller and Ozment (1999) have shown that dispatchers can have a greater impact on a firm`s ability to retain drivers than has been realized yet. Dispatchers who exercise greater listening skills and who respond more effectively to drivers’ concerns have lower driver turnover rates than those who fail to recognize the importance of empathetic communication with drivers. Contradicting to Keller and Ozment (1999), LeMay, Johnson, Williams & Garver (2013) showed that drivers attitudes towards top management and dispatchers did not influence the intention to quit the company. A possible explanation for this “change” even though it might not be generalized to all trucking firms is the extensive use of new technology.

Driver health and safety

Crum & Morrow (2002) indicate that the significant predictors of driver fatigue are: a difficulty to find a place to rest, shipper and receiver scheduling practices and requirements including loading and unloading. Adams-Guppy & Guppy (2003) performed interviews and questionnaire surveys on over 700 commercial goods drivers and their managers within a series of related companies operation across 17 countries. Experience of fatigue problems while driving were linked to time of day and rotation of shifts, though most associations were small. There were significant associations found between fatigue experience and driver and management systems of break taking and route scheduling. The quantitative combined with

qualitative information suggested that, where feasible, more flexible approaches to managing and scheduling and sequencing of deliveries assisted drivers in managing their own fatigue problem through appropriate break taking.

Shattell, Apostolopoulos, Sönmez and Griffin (2010) identified 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 fear of violence. Truckers also talked about 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. (2009) that electronic logbook adoption does contribute to a reduction in hours of service violations. The result also shows that hours of service violations mediate the relationship between electronic logbooks and motor carrier crashes.

LeMay et al. (1993) showed that longer average length of haul and age of fleet are both associated with higher turnover. It would appear that long-haul drivers push themselves to a form of burnout, and then drop from the firm or exit the industry for a while. Facing such stressors may be a factor in the prevalence of risky behaviors, including drug use and paying for sex. Therefore, mental health promotion and treatment for truckers is an important area of concern and must be examined within the broader context of the transportation environment (Shattell et al., 2010).

Cantor et al. (2009) summarized the reasons for investigating driver safety as follows: “Motor carrier safety is an import carrier management and public policy issue. Large truck accidents cause significant losses on multiple levels beyond the most salient human impact of serious injury and loss of life (Zaloshnja & Miller, 2007).” Motor carrier safety is also an important issue in logistics and the supply chain”. Motor carrier crashes can cause numerous types of disruptions to the supply chain (MCKinnon, 2006).

Even though a lot of research has been done on the subject of driver health and safety, Kemp et al. (2013) were the first to research the relationship between role conflict and emotional exhaustion experienced by truck drivers. Emotional exhaustion is one of the components of a burnout. Paragraph 2.2 will go into all components of a burnout.

Little is known about role stressors and the components of a burnout for truck drivers. The research by Kemp et al. (2013) took place in the U.S. There might be differences between the results in the U.S. and the Netherlands which can be caused by several reasons. For example, differences in culture, working environment, working regulations etc. Therefore, this study will also validate the following hypotheses regarding role stressors and emotional exhaustion.

H1: There is a positive relationship between role conflict in the professional trucker driver’s working environment and emotional exhaustion.
H2: There is a positive relationship between role ambiguity in the professional truck driver’s working environment and emotional exhaustion.

2.2 Burnout

Maslach and Jackson (1981) define burnout as a syndrome of emotional exhaustion and cynicism that occurs frequently among individuals who do “people work” of some kind. A key aspect of the burnout syndrome is increased feelings of emotional exhaustion. As their emotional resources are depleted, workers feel 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 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 or in other words diminished personal accomplishment. Workers feel unhappy about themselves and dissatisfied with their accomplishments on the job.

These consequences of burnout are potentially very serious for the staff, the clients and the larger institutions in which they interact. Maslach and Jackson (1981) suggest that burnout can lead to a deterioration in the quality of care or service that is provided by the 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, and marital and family problems. behaviors which are also found by truck drivers which face occupational stressors (Shattell et al., 2010).

Gaines and Jermier (1983) identified that emotional exhaustion is the dimension of burnout that seems most applicable to occupations other than human services. Burnout has been almost exclusively associated with those who deal with clients, such as physicians, nurses, social workers, firemen, and police officers (Perlman & Hartman, 1982). However, because of its similarity to chronic fatigue states, emotional exhaustion (unlike client depersonalization and self-devaluation) appears generalizable to air traffic controllers, miners, steel workers, assemblers, office workers, and others who are exposed to fatiguing work conditions.

Singh et al. (1994) stated the more we know about the etiology of burnout, and the processes by which role stressors positively and negatively affect job outcomes, the greater the likelihood of creating boundary roles that balance the need for retaining the eustress inherent in role stressors and reducing burnout among employees. As Maslach (1982, p40) explains, “the promise inherent in understanding burnout is the possibility of doing something about it.”

Babakus et al. (1999) researched sales force behavior and attitude relationships. This research offers strong support for relationships involving role ambiguity and conflict antecedents and organizational commitment, job satisfaction, performance, and intention-to-leave consequences of emotional exhaustion. Schaufeli and Bakker (2004) also confirmed that burnout is related to health problems as well as to turnover intention.

Sersland and Nataraajan (2015) identified that mental and physical well-being of long-haul drivers such as, extreme schedules entailing sleep deprivation, poor dietary habits, and loneliness can and do take a toll on the health of drivers. Sleep complaints are present in burnout subjects (Vela-Bueno et al., 2008). Sleep is restorative for daily functioning, whereas sleep deprivation seems to make us more sensitive to emotional and stressful stimuli and

events (Vandekerckhove & Cluydts, 2010). Loneliness and boredom also make drivers more susceptible to giving into temptations that can wreak havoc on their health.

Based on this we expect that role stressors have a relationship with the components of a burnout and that the quality of sleep has a moderating effect on this relationship. In the next paragraph the role stressors will be discussed and we conclude that paragraph with the hypothesis for the expected relationship between role stressors and the three components for burnout for truck drivers.

2.3 Role stressors

Lee and Schuler (1980) identified that role stress is becoming increasingly more pervasive and dysfunctional for individuals and organizations. It was hypothesized that both goal setting content and leader initiating structure are related to employee satisfaction because of their association with the stressful conditions of role conflict and ambiguity. The relationships between goal setting content and satisfaction and between leader initiating structure and satisfaction are reduced when the effects of role conflict and ambiguity are removed. The results of their research strongly supported those relationships.

Kelloway and Barling (1991) showed in their research based on 720 hospital employees that emotional exhaustion was predicted by role ambiguity and role conflict. Similarly, depersonalization was caused by the two role stressors.

Um and Harrison (1998) proposed a model which specified interrelationships among work stressors and burnout, the intervening factors between burnout and job satisfaction, and the final outcome variable, job satisfaction. Then the theoretical model was translated into on empirically testable model. Finally, the model was tested with a sample of 165 clinical social workers in Florida by using linear structural relation (LISREL) techniques. The results of analysis of components fit indicated that role conflict did intensify the amount of burnout and job dissatisfaction. Social support acted as an intervening and moderating factor between burnout and job dissatisfaction.

Cravens, Lassk, Low, Marshall and Moncrief (2004) researched role stressors in the sales organization. Hypotheses are developed and tested using a sample of 1042 salespeople from a broad range of industries and companies. Two major components of stress, role ambiguity and role conflict, are included in the control consequences. The findings suggest that salespeople who work under a more visible control system (high control) perform better, are more satisfied, and display lower burnout and role stress, compared to salespeople working under bureaucratic, clan, and low control combinations.

Idris, O'Driscoll, and Anderson (2011) examined the mediation effect of strain on the relationship between role stressors and three withdrawal responses (i.e. cynicism, reduced professional efficacy and diminished organizational commitment) among a sample of Malaysian public university academics. They collected data from 357 academics and additional data 6 months later from 210 of these academics. Results showed that role stressors were associated with withdrawal behaviors via strain. Strain mediated the relationship between role ambiguity and all three withdrawal responses and the relationship between role conflict and cynicism.

Professional truck drivers experience many challenges in the course of performing their jobs. Drivers must meet the needs of their company, shippers, and receivers as well as comply

with safety regulations. An example for role conflict is when a driver is out of hours (safety regulations) but his dispatcher wants him to deliver the goods (company, shipper). Role ambiguity can take place when a shipper wants a driver to unload his freight on different locations on the premises but the driver needs to contact the dispatcher for such simple tasks (Kemp et al., 2013). Therefore, we hypothesize the following.

H3: There is a positive relationship between role conflict in the professional trucker driver's working environment and depersonalization
H4: There is a positive relationship between role ambiguity in the professional trucker driver's working environment and depersonalization
H5: There is a positive relationship between role conflict in the professional trucker driver's working environment and diminished personal accomplishment.
H6: There is a positive relationship between role ambiguity in the professional trucker driver's working environment and diminished personal accomplishment.
H7: An overall good sleep quality has a negative influence on the relationships between role stressors and the components of a burnout.

2.4 Emotional intelligence

In recent years, the scientific literature has reflected particular interest in the study of individual differences in the ability to process and utilize emotional information (Mayer, Roberts, & Barsade, 2008). This perspective is based on 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 (Ciarrochi, Chan, Caputi, & Roberts, 2001). Such abilities have been conceptualized in general under the term *emotional intelligence* (Salovey & Mayer, 1990).

Keller and Ozment (1999) have shown that dispatchers can have a greater impact on a firm's ability to retain drivers than has yet been realized. Dispatchers who exercise greater listening skills and who respond more effectively to drivers' concerns have lower driver turnover rates than those who fail to recognize the importance of empathetic communication with drivers.

The research of Keller (2002) showed that highly responsive dispatcher behavior toward drivers influences drivers to develop similar behavior and relationships with external customers. Therefore, it becomes important to train dispatchers in appropriate response behavior techniques and provide dispatchers with a work setting and tools needed to properly address all driver feedback.

Kemp et al. (2013) identified that further research is needed in assessing if the emotional intelligence of dispatchers might be adroit in detecting the burnout syndrome in drivers. Companies might provide training; such training might include ways in which to coach and develop effective problem-focused coping skills in drivers.

It might be that the emotional intelligence of the driver act as a moderating variable in the relationship between role stressors and the components of a burnout. Based on findings from Keller and Ozment (1999) and Keller (2002) we belief there is a moderating effect. Therefore, we hypothesize the following.

H8: A high perceived emotional intelligence of a dispatcher has a negative influence on the relationships between role stressors and the components of a burnout.

2.5 Conceptual model

The hypothesizes formed in the last paragraphs lead to the following conceptual model.

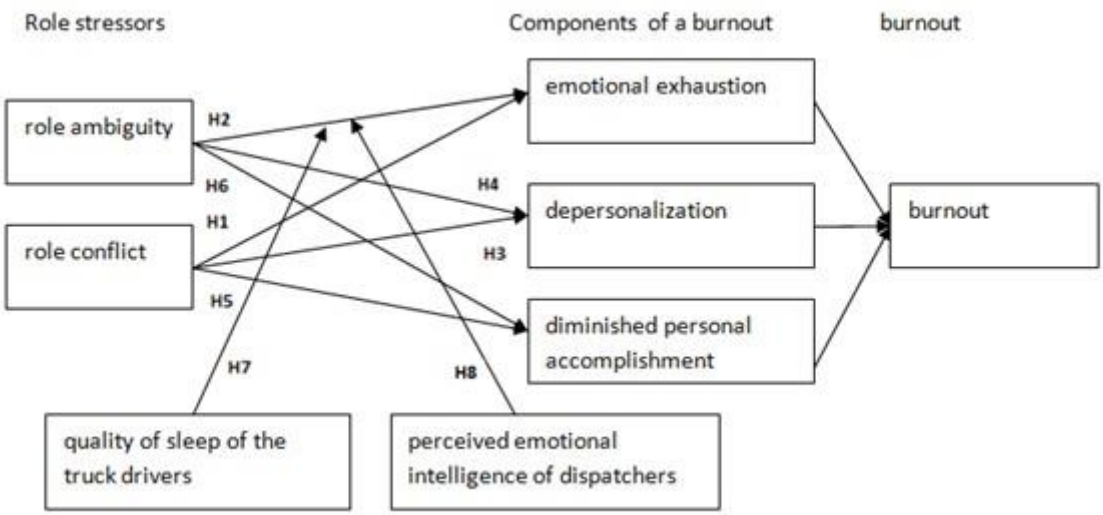

Figure1: Conceptual model

3. Research methodology

This chapter describes the research design that was used for this research. It provides information about the research strategy, population, design, procedure, measurements, data analysis and methodological issues.

3.1 Research design

In this research, we needed to collect data from a large number of truck drivers. Per truck driver we needed to ask several questions about 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. With the collected data, the hypotheses will be tested.

A questionnaire is used to gather the data for the different constructs. This is because a questionnaire has the best fit for gathering descriptive data, it can cover a wide range of topics, it is relatively inexpensive to use and it can be analyzed using a variety of existing software (Fretchling et al., 2002).

This study utilizes a two-wave time-lagged design (Ployhart & Vandenberg, 2010). There is little theoretical background available to determine a proper time lag between the first and second wave. Studies in other areas used 5 months (Brouwers & Tomic, 2000) for a longitudinal study of teacher burnout and perceived self-efficacy in classroom management or 12 months, as Peiró, González-Romá, Tordera and Mañas (2001) did in their study *Does role stress predict burnout over time among health care professionals?* Peiró et al. (2001) summarized that longitudinal studies found that burnout is a relatively stable and consistent phenomenon over time. In this study, we will use a time interval of two months. The first questionnaires were taken in the period of August and September of 2016.

3.2 Data collection

TLN (2016) reports that the labor market for truck drivers is changing due to for example innovations and specializations in the industry. They report that it is very hard to nearly impossible to find qualified truck drivers. We expect that due to this shortage there already will be high working pressure, high amount of assignments and/or possible planning problems regarding promptness of deliveries which might result in stress. Therefore, we expect that the Dutch market is a relevant market to do this study.

The data for this study is collected through online survey. The questionnaires were spread through various social networks such as Facebook, trucker forums, and news sites, such as transportpers.eu, ttm.nl.

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 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 is guaranteed and the truck drivers were informed that the questionnaires will not be shared with anyone in their company. In case both surveys are filled completely one can win a €25, - Bol.com gift card for time and effort.

Two waves of data collection

In the first wave (T1) the possible causes of burnout have been measured such as role conflict, role ambiguity, quality of sleep and the perceived emotional intelligence of the dispatcher. The Dillman Total Design Survey Method (Hoddinott & Bass, 1986) is used to increase our response rate for the second wave. Two months after the first survey is filled an e-mail is sent to the truck drivers to inform them the second survey can be filled (T2). In case the driver did not fill the survey, a reminder is sent, which stresses the importance for the research and the possibility to win the gift card for the driver. If the driver did not respond after this reminder a final reminder has been sent including a date when the response is expected. In the second wave the three elements of burnout were measured, emotional exhaustion, depersonalization and diminished personal accomplishment. This means that for the possible causes for burnout measured in T1 we will check if there is positive relation with the three components of a burnout in T2.

The questionnaire was reviewed by five truck drivers to find out whether the questionnaire is understood. Each was interviewed after they completed the questionnaire. This test was valuable because of the feedback given. After the pre-test, the wording of some questions was changed. Also, some questions with regard to working with colleges or the boss were removed, because the drivers feel that most of the time, they do not work together with their colleges, but do their job on their own.

3.3 Measures

In order to be able to describe our sample several general questions were asked such as gender, age, questions regarding the shifts and type of goods driven by the drivers.

We used the same definition as Maslach and Jackson (1981) for burnout as discussed in the literature review. Items from Singh et al. (1994) were used for measuring burnout drawn from the scale developed by Maslach and Jackson (1981). The items were modified to include statements about loading and unloading locations, employees at loading/unloading location rather than nonspecific “recipients. Five items per construct were put to all respondents.

Rizzo et al. (1970) showed that dysfunctional individual and organizational consequences result from the existence of role conflict and role ambiguity in complex organizations. Rizzo et al. (1970) define role conflict as the situation where a person does not have clear direction about the expectations of his or her role in the job or organization. Rizzo et al. (1970) define role ambiguity as incompatibility in communicated expectations that impinge on perceived role performance.

Kemp et al. (2013) used measures adapted from Rizzo, House and Lirtzman (1970) to measure role conflict and role ambiguity. Consistent with Kemp et al. (2013), we use 8 items to measure role conflict. 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 multiple times in a very short time. All drivers recommended to remove 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 items to measure role ambiguity.

Wong and Law (2002) developed a scale to measure emotional intelligence and validated this based on the definition from Salovey and Mayer (1997). This scale consists of 4 items. 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 use of emotion to facilitate performance (use of emotion [UOE]). In this research, 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 ask the drivers how the dispatchers score on these items.

Questions from the Karolinska Sleep Questionnaire (Åkerstedt et al., 1994) are used to measure sleep problems. During the pre-test, the drivers indicate that, if they are sleeping alone in the truck, it is difficult to identify if one is *snoring loud and embarrassingly* and *have periods with breathing pauses during the night.* These questions have been removed. The questionnaire contains questions about how often certain sleep problems occur. The chosen period for these sleep problems is aligned with the time-lag.

During the interviews and with the open feedback possibility several drivers informed us about possible causes for their stress. These possible causes are in line with indications from Crum and Morrow (2002) for driver fatigue, the occupational stressors reported by Shattel et al. (2010) and indicators reported by Kemp et al. (2013). In the second wave 11 of the most common causes were measured to identify if these causes are incidents or structural.

The questionnaire starts off with a short introduction and explanation about the survey. The items are measured on the Likert scale. The reason to use a Likert scale is to promote unambiguous measurement. The study takes place in The Netherlands, therefore all questions, if not already available in Dutch, are translated to the Dutch language. The questionnaire can be found in Appendix 1: Questionnaire.

3.4 Data analysis

For simple (variance) analysis the IBM SPSS Statistics software is used. The more complex analyses are done using structural equation modeling (SEM). SEM is a statistical technique that combines elements of traditional multivariate models (e.g., regression analysis, factor analysis, path analysis) (Adelson, 2012). The software used for SEM is SmartPLS (Ringle et al., 2015).

We have collected surveys by 534 truck drivers from whom 427 gave their e-mail address for the second survey. 214 drivers filled the survey the second time. With this approach, we expected to target a representative group of the population.

3.5 Methodological issues

Surveys with questionnaires have as advantage that they can relatively easily be reproduced. We tried to reach out to the truck drivers in the Netherlands via multiple online channels. The one bringing the research under the attention presented himself as a student and guaranteed anonymity to increase the response rate. Given the time and budget available we have tried to increase reliability, internal and external validity.

Reliability

A combined questionnaire is used. The questions to measure the constructs for the conceptual model are validated questions from other researchers namely: Signh et al. (1994), Rizzo, House and Lirtzman (1970), Wong and Law (2002) and (Åkerstedt et

al.,1994). These researchers did their research in other industries. The questions had to be translated to the Dutch language to increase the response rate in The Netherlands. 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 for our research.

External validity

External validity describes the degree of generalizability of the study. This means that the research should include a wide variety of respondents. To achieve this, a request to participate is posted on several Dutch trucker Facebook pages, such as Benelux Chauffeurs (2,275 members), SamenSterk in Transport 2 (11,517 members) 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 posted the request such as Transport.nl, Transportpers and Mentaalgezond.

Internal validity

Internal validity is the extent to which variables have a causal relationship with each other. The questions to measure the constructs for the conceptual model must be answered on a Likert scale basis. Therefore, there is no space for respondents to bring different elements which are not relevant to this study.

4. Results

In this chapter the results are presented, data analyzed and explained.

4.1 Research results

The questionnaire was taken online, 534 people answered all questions of whom 427 people included their e-mail addresses. The e-mail address was important for contacting the driver a second time and to link the results from the first and the second wave. In the second wave 214 drivers filled the survey.

In the first wave the predictors for a burn-out were measured, such as: role ambiguity (RA), role conflict (RC), quality of sleep and perceived emotional intelligence of the planner (PEI). The three constructs of a burnout, emotional exhaustion (EE), depersonalization (DP) and diminished personal accomplishment (DPA) were measured during the second wave. This study measures if possible causes of burnout are increasing the chance of having a burn-out.

According to Hair et al. (2014) a popular heuristic state that the minimum sample size for a PLS model should be equal to the larger of the following:

- 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

Following this method, we would need to have a sample of at least 90 drivers. However, Hair et al. (2014) also states that researchers should approach this guideline with caution, as misunderstandings have caused skepticism about the general uses of PLS-SEM. In our case, we have 214 full responses which are used for our study.

In the table below the sex ratio of this study can be found. It is no surprise that most of the responses were from male participants.

Gender	Number of respondents	Percentage
male	200	93%
female	14	7%
total	214	100%

Table 1:Sex ratio

The age distribution can be found in the table below. The number of respondents is generally fairly distributed over the age categories.

Age group	Number of respondents	Percentage
<20	0	0%
20 to 29	38	18%
30 to 39	44	21%
40 to 49	73	34%
50 to 59	45	21%
≥60	14	7%
Total	214	100%

Table 2:Age ratio

From the respondents 27,6 % worked in regular shifts. The spread over the different shifts can be found in the circle diagram below.

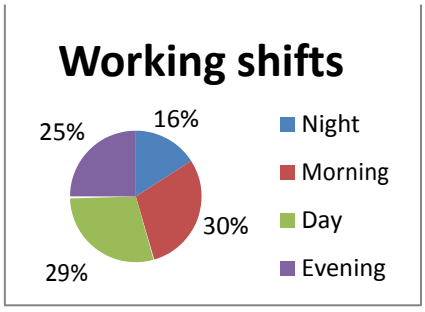

Figure 2: Working shifts

In the second wave, there were eleven questions included about topics which might cause stress on the job. The respondent could answer on a Likert scale 1 – 6, 1 meaning completely disagree and 6 meaning that the respondent completely agrees that the item causes stress. The respondent could also answer that the topic was not applicable. The results can be found in the table below.

Nr	Possible causes for stress	1	2	3	4	5	6	Total	Average
1	Aggression of other road users	13	6	11	43	67	70	210	4,69
2	Finding a suitable resting place	12	18	7	39	55	63	194	4,53
3	Enforcement of driving hours	16	31	12	30	52	69	210	4,32
4	Implementation of the digital tachograph	26	38	6	25	47	64	206	4,07
5	Different safety regulations on loading and unloading locations	12	44	22	39	60	29	206	3,86
6	Length of working day	20	45	19	45	42	40	211	3,78
7	Automation (GPS, planning software etc.)	24	38	21	39	43	28	193	3,64
8	Planner considering private situations (be home in time)	28	42	17	46	48	30	211	3,64
9	Afraid of losing job by a cheaper driver	31	46	24	33	32	37	203	3,49
10	Insufficient aid on loading and unloading locations	14	59	27	39	42	18	199	3,45
11	No possibilities for working part-time	30	40	16	17	29	24	156	3,30

Table 3: Possible causes for stress

4.2 Data analysis

We started with analyzing the quality of the received data in Excel. Incomplete entries were removed. Date of birth was adjusted to age, for example 1969 → 47, ages under 18 were adjusted to the average age. There was one entry where the respondent answered that he slept 62 hours on average per night, this has been adjusted to 6.2 hours. One line is removed based on monotone response, the person claimed to be 120 years old, to have 23 children, to be 14 nights per week on the road for work and all answer were put on “1” in case the answers were based on the Likert scale. The final adjustment on the data was to normalize the nights away for work per week to a month instead of a week in case the number was >7, for example 9/20*5.

The items for role ambiguity, other emotion appraisal, regulation of emotion and reduced personal accomplishment were reversed coded items. They have been reversed. The Kolomogorov-Smirnov and Shapiro-Wilk test showed normal distributed data.

4.3 Reliability and validity of the model

Smart-PLS version 3.2.6 (Ringle et al., 2015) is used to estimate path coefficients of the relationships between the variables in the model. Hair et al. (2014) stresses that the outer model needs to be checked before the inner model can be analyzed. The outer model exists of the single items making a construct. By checking the validity and reliability of the outer model the researcher can trust that the constructs, which form the basis for the assessment of the inner model relationships, are accurately measured and represented.

Reliability

The most important reliability measure for PLS is ρA (Dijkstra and Henseler, 2015); it currently is the only consistent reliability measure for PLS construct scores (Henseler et al., 2016). The ρA should be >0.7 to be reliable. We identified that role ambiguity scores slightly below the 0.7, the composite reliability of role ambiguity is 0.770. Removing one of the items does not increase the score of role ambiguity so we continue the analysis.

ρA	Original Sample	Sample Mean	STDEV	T Statistics > 1,96
Depersonalization	0.854	0.855	0.019	45.678 *
Diminished personal accomplishment	0.852	0.849	0.030	28.147 *
Emotional intelligence	0.895	0.895	0.012	71.956 *
Perceived emotional intelligence	0.925	0.926	0.009	97.377 *
Quality of sleep	0.879	0.882	0.014	61.556 *
Role ambiguity	0.623	0.630	0.068	9.232 *
Role conflict	0.906	0.908	0.010	93.365 *

Table 4: Internal consistency ρA * P values <0,001

Validity

Validity is examined by noting a construct`s convergent validity and discriminant validity. Support is provided for convergent validity when each item has outer loadings above 0.70 and when construct`s average variance extracted (AVE) is 0.50 or higher (Henseler et al., 2016). The outer loadings per item can be found in appendix 7.2. To reach the required level of 0.50 per construct, the following items have been removed: Sleep 5 with an outer loading of 0.537 (difficulties to wake up) and DPA1 with an outer loading of 0.429 (I feel my supervisor values my contribution to the firm). These removals lead to the following AVE for the total model which can be found in table 2 below.

AVE	Original Sample	Sample Mean	STDEV	T Statistics > 1,96
Depersonalization	0.692	0.691	0.027	25.182 *
Diminished personal accomplishment	0.517	0.517	0.040	13.069 *
Emotional intelligence	0.672	0.671	0.025	27.395 *
Perceived emotional intelligence	0.709	0.708	0.026	27.117 *
Quality of sleep	0.515	0.515	0.025	20.699 *
Role ambiguity	0.532	0.531	0.040	13.349 *
Role conflict	0.595	0.595	0.025	23.811 *

Table 5:Internal validity: average variance extracted for the total model * P values <0,001

Not all remaining items have an outer loading of ≥ 0.70. However, the total AVE of each construct is above 0.50 and we prefer to keep as much information on the construct as possible for further analysis.

The discriminant validity represents the extent to which the construct is empirically distinct from other constructs (Henseler et al., 2016). The Fornell-Larcker criterion and the heterotrait-monotrait (HTMT) ratio are used. The Fornell-Larcker criterion says that a factor`s AVE should be higher than its squared correlations with all other factors in the model. In a well-fitting model, heterotrait correlations should be smaller than monotrait correlations, meaning that the HTMT ratio should be below 1.0, Henseler, Ringle & Sarstedt (2015) suggest that if the HTMT value is below 0.90, discriminant validity has been established. The results of these test can be found in the tables below.

Fornell-Larcker(square AVE)	DP	DPA	EE	PEI	QOS	RA	RC
Depersonalization	0.832						
Diminished personal accomplishment	0.620	0.719					
Emotional intelligence	0.718	0.516	0.819				
Perceived emotional intelligence	0.524	0.572	0.537	0.842			
Quality of sleep	0.438	0.288	0.540	0.460	0.718		
Role ambiguity	0.374	0.459	0.380	0.509	0.341	0.729	
Role conflict	0.600	0.532	0.613	0.590	0.497	0.497	0.772

Table 6:Internal validity: Fornell-Larcker

HTMT	DP	DPA	EE	PEI	QOS	RA	RC
Depersonalization							
Diminished personal accomplishment	0.653						
Emotional intelligence	0.827	0.507					
Perceived emotional intelligence	0.584	0.576	0.585				
Quality of sleep	0.488	0.294	0.595	0.508			
Role ambiguity	0.502	0.583	0.505	0.689	0.497		
Role conflict	0.677	0.544	0.680	0.642	0.552	0.658	

Table 7:Internal validity: HTMT for the total model

The constructs in our model pass both internal validity tests.

4.4 Assessing structural model results

Once the reliability and validity of the outer models is established, several steps need to be taken to evaluate the hypothesized relationships within the inner model. PLS-SEM does not have a standard goodness-of-fit statistic and prior efforts of establishing a corresponding statistic have proven highly problematic. Instead, the assessment of the model`s quality is based on its ability to predict the endogenous constructs (Hair et al. 2014).

We will follow the process suggested by Henseler et al. (2016). This process is drawn in figure 3 and explained below.

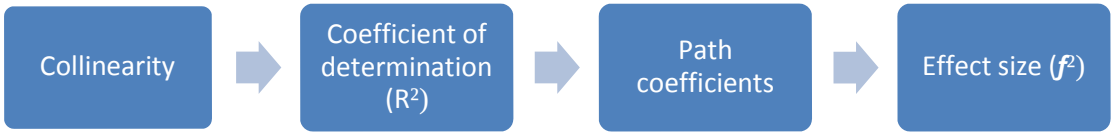

Figure 3 Assessment of the model`s quality (Henseler et al. 2016).

Collinearity

The Variance Inflation Factor (VIF) is calculated to determine collinearity. In the table below it is shown that there are no signs of collinearity issues, since all values are far below 5.0.

VIF	Depersonalization	Diminished personal accomplishment	Emotional exhaustion
Perceived emotional intelligence of dispatchers	1.902	1.902	1.902
Quality of sleep of the truck drivers	1.502	1.502	1.502
Role ambiguity	1.572	1.572	1.572
Role conflict	1.875	1.875	1.875

Table 8: VIF of the model

Coefficient of determination (R^2)

The R^2 is a measure of the model`s predictive accuracy. Because R^2 is embraced by a variety of disciplines scholars must rely on a "rough" rule of thumb regarding an acceptable R^2, with 0.75, 0.50, 0.25, respectively describing substantial, moderate, or weak levels of predictive accuracy (Hair et al., 2014). In our case, all values are around the 0.50 area as shown in table 9, and therefore have a moderate level of predictive accuracy.

Coefficient of determination	Original Sample	Sample Mean	STDEV	T Statistics > 1,96
Depersonalization	0.430	0.457	0.049	8.716*
Diminished personal accomplishment	0.418	0.446	0.048	8.791*
Emotional exhaustion	0.485	0.511	0.047	10.232*

Table 9: Coefficient of determination * P values <0,001

Path coefficients

If the analyst`s aim is to generalize from a sample to a population, the path coefficients should be evaluated for significance. Inference statistics include the empirical bootstrap confidence intervals as well as one-sided or two sided ρ values (Henseler et al., 2016). Henseler et al. (2016) recommend to use 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 an unanimous determination of empirical bootstrap confidence intervals.

In the table below the relations relevant for our study are shown. The green relations are supported to be there and significant.

	Path coefficients	Original Sample	Sample Mean	STDEV	T Statistics > 1,96	P Values < 0,05
H1	Role Conflict -> Emotional exhaustion	0.365	0.369	0.076	4.779	0.000
H2	Role Ambiguity ->Emotional exhaustion	0.016	0.014	0.065	0.245	0.806
H3	Role Conflict -> Depersonalization	0.413	0.410	0.079	5.253	0.000
H4	Role Ambiguity ->Depersonalization	0.024	0.030	0.072	0.331	0.741
H5	Role Conflict ->Diminished personal accomplishment	0.287	0.283	0.075	3.802	0.000
H6	Role Ambiguity ->Diminished personal accomplishment	0.148	0.153	0.070	2.121	0.034
H7	Sleep ->Depersonalization	0.138	0.140	0.065	2.116	0.034
H7	Sleep->Diminished personal accomplishment	-0.041	-0.042	0.066	0.624	0.533
H7	Sleep ->Emotional exhaustion	0.251	0.248	0.060	4.204	0.000
H7	Role Ambiguity -Sleep ->Emotional exhaustion	-0.018	-0.009	0.069	0.254	0.800
H7	Role Ambiguity -Sleep ->Depersonalization	-0.109	-0.105	0.071	1.545	0.122
H7	Role Ambiguity -Sleep ->Diminished personal accomplishment	-0.077	-0.083	0.061	1.259	0.208
H7	Role Conflict -Sleep ->Emotional exhaustion	0.098	0.102	0.079	1.238	0.216
H7	Role Conflict -Sleep ->Depersonalization	0.057	0.054	0.079	0.722	0.470
H7	Role Conflict -Sleep ->Diminished personal accomplishment	-0.034	-0.029	0.067	0.504	0.615
H8	PEI Dispatcher ->Depersonalization	0.185	0.183	0.076	2.446	0.014
H8	PEI Dispatcher ->Diminished personal accomplishment	0.331	0.331	0.072	4.577	0.000
H8	PEI Dispatcher ->Emotional exhaustion	0.200	0.197	0.067	2.967	0.003
H8	Role Ambiguity -PEI Dispatcher ->Emotional exhaustion	-0.051	-0.060	0.075	0.676	0.499
H8	Role Ambiguity -PEI Dispatcher -> Depersonalization	0.011	0.003	0.067	0.161	0.872
H8	Role Ambiguity -PEI Dispatcher ->Diminished personal accomplishment	0.098	0.096	0.064	1.536	0.125
H8	Role Conflict -PEI Dispatcher ->Emotional exhaustion	-0.070	-0.072	0.074	0.946	0.344
H8	Role Conflict -PEI Dispatcher ->Depersonalization	0.059	0.063	0.077	0.771	0.441
H8	Role Conflict -PEI Dispatcher ->Diminished personal accomplishment	0.043	0.040	0.072	0.607	0.544

Table 10 Path coefficients

Positive relationships between role stressors and the elements of burnout show that the more indicators of role stressors there are, the more indicators of burnout are shown, as expected in the hypotheses 1 -6. For the moderating effects a negative relationship is expected, because the perceived emotional intelligence of a dispatcher and/or the quality of sleep is expected to reduce the effects of role stressors on the elements of burnout, hypothesis 7 and 8.

Effect size (f^2)

The effect size for each path model can be determined by calculating Cohen`s f^2. Based on the f^2 value, the effect size of the omitted construct for a particular endogenous construct can be determined such that 0.02, 0.15, and 0.35 represent small, medium and large effects, respectively (Cohen, 1988).

These values can be found in the table below.

Cohen`s f^2	Depersonalization	Diminished personal accomplishment	Emotional Exhaustion
Role Ambiguity -PEI Dispatcher			0.003
Role Ambiguity -PEI Dispatcher	0.000		
Role Ambiguity -PEI Dispatcher		0.011	
Role Ambiguity -Sleep			0.000
Role Ambiguity -Sleep	0.014		
Role Ambiguity -Sleep		0.007	
Role Conflict -PEI Dispatcher			0.005
Role Conflict -PEI Dispatcher	0.003		
Role Conflict -PEI Dispatcher		0.002	
Role Conflict -Sleep			0.010
Role Conflict -Sleep	0.003		
Role Conflict -Sleep		0.001	
PEI Dispatcher	0.032	0.099	0.041
Sleep	0.022	0.002	0.081
Role Ambiguity	0.001	0.024	0.000
Role Conflict	0.160	0.075	0.138

Table 11 Cohen`s f^2

The grey items have none too small, the yellow items small to medium, and the green items have medium effects.

4.5 Hypotheses

After the calculation of all above values we can define which constructs influence another. We used the t-test (> 1.96), with p-value (<0.05) to determine whether the hypotheses are significant. In figure 4 the empirically validated model and in table12 the hypotheses and their significance can be found.

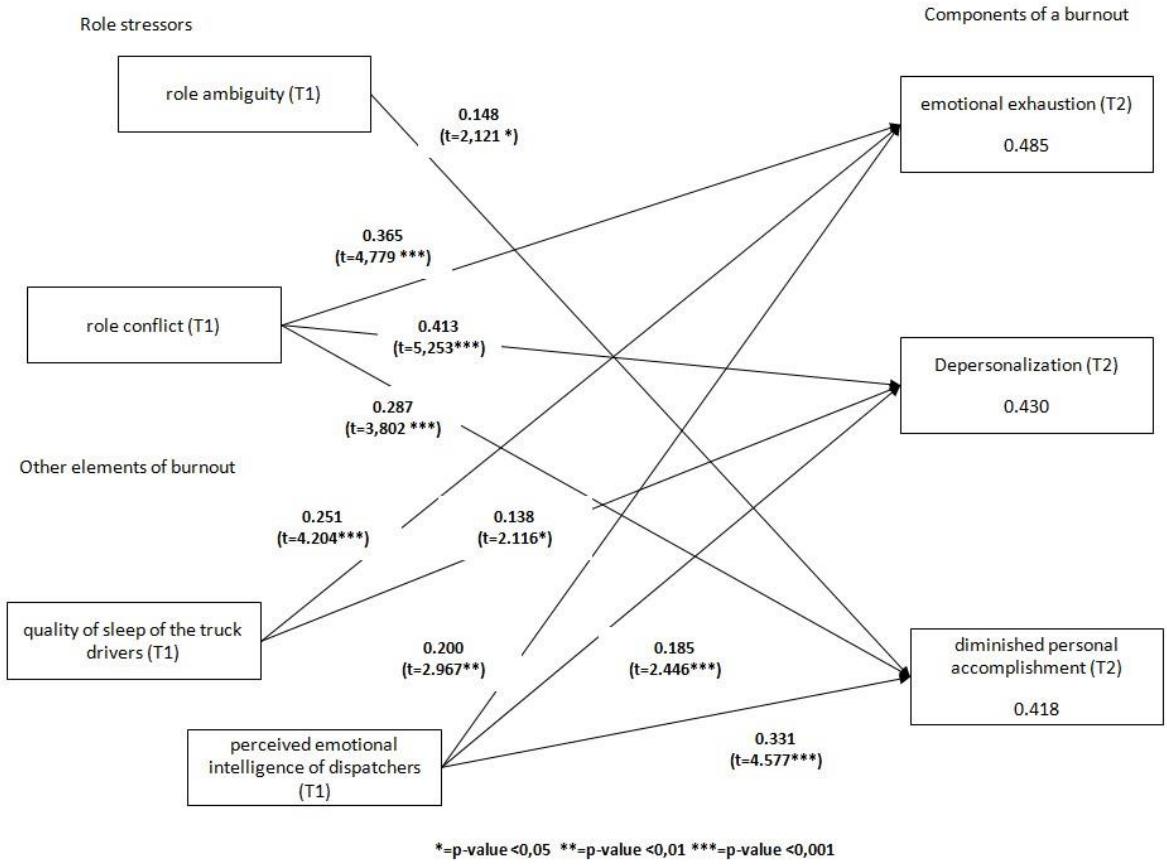

Figure 4: Empirically validated model

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 -> Diminished personal accomplishment	3.802	0.000	Supported
H6: Role Ambiguity->Diminished personal accomplishment	2.121	0.034	Supported
H7: Sleep moderating effect	< 1.96	> 0.05	Not supported
H8: PEI Dispatcher moderating effect	< 1.96	> 0.05	Not supported

Table 12: Hypotheses

The goal of this research is to show if there is a relationship between the role stressors for a truck driver and the three components of a burnout. The relations between the constructs role conflict and emotional intelligence, depersonalization and diminished personal accomplishments are all significant. For role ambiguity, the relationship with emotional exhaustion and depersonalization are not significant, the relationship with diminished personal accomplishment is.

The expected moderating effects regarding quality of sleep and perceived emotional intelligence are not significant. Interesting to see is that a poor perceived emotional intelligence has a significant impact on all components of a burnout. A poor quality of sleep

has a significant impact on two out of three components of a burnout. Four out of the eight hypotheses are rejected.

Based on these findings the coefficient of determination (R^2), path coefficients and effect size (f^2) have been calculated in two separated models. One model where only the direct effects from the perceived emotional intelligence of the dispatcher to the three components of burnout were calculated and one model where the quality of sleep of the truck driver to the three components of burnout where calculated. The results can be found in Appendix 7.3 direct effects.

5. Conclusion, discussion & recommendations

In this chapter the results are further discussed and conclusions are drawn. The implications will follow and we conclude with the limitations and recommendations for further research.

5.1 Conclusions

The biggest challenge in the road transport sector in 2017 is driver shortage (Logistiek.nl). Several topics have already gained a lot attention from researchers, such as truck driver retention, truck driver health and safety. However, little is known about the relation between role stressors and the components of a burnout for truck drivers. Therefore, the main question in this study is: *Is there a relationship between the role stressors for a truck driver and the three components of a burnout?*

This research uses validated constructs which have been used in previous research. The items in these constructs have been translated to the Dutch language and have been adjusted to the trucking industry where necessary. A time lagged design is used where the role stressors, quality of sleep and perceived emotional intelligence are measured at (T1) and two months later (T2) the three components of burnout.

The conceptual model satisfies the minimum criteria of a model, this means that all criteria in the model have a fit and the model is reliable. Four out of eight hypotheses meet the criteria for the p-value and the t-value.

Findings of this research indicate that role conflict in the professional trucking environment is positively related to the three components of a burnout. A poor perceived emotional intelligence of the dispatcher, who is the interface between the company and the truck drivers is also positively related to the three components of a burnout. At last a poor quality of sleep of the truck driver has a positive relation to depersonalization and emotional exhaustion.

There is not enough evidence in this study to support that role ambiguity is positively related to emotional exhaustion and depersonalization. Neither is there to support that the quality of sleep is positively related to diminished personal accomplishment.

The top three role stressors reported in the second wave are: aggression of other road users, finding a suitable parking place and enforcement of driving hours. These are all related to the trucking industry rather than being related to the company they work for.

5.2 Discussion

Professional truck drivers may be subjected to role stressors, which in previous research (Kemp et al., 2013; Babakus et al., 1999; Kelloway & Barling, 1991) have been linked to emotional exhaustion. Emotional exhaustion is one of the three components identified to be an aspect of burn-out (Maslach & Jackson,1981). In our study we measured the possible causes for burnout at (T1) and the elements of burnout two months later at (T2). So our study measures the relationships over time.

The results of this study support that role conflict is positively related to the three aspects of a burnout and role ambiguity is positively related to diminished personal accomplishment. Results did not support the relationships between role ambiguity and the two other components of burnout, emotional exhaustion and depersonalization. The relationship

between role ambiguity and emotional exhaustion has been researched by Kemp et al. (2013) and this study has a consistent outcome. Consistent with Kemp et al. (2013) this study used a global construct for role ambiguity. Singh (1993) suggested that moderate levels of role ambiguity may in fact help individuals to creatively manage role demands, providing some freedom to employees to pursue their values.

King and King (1990) and Singh (1991) suggested that role ambiguity is multifaceted in nature. It might be that if a multifaceted construct were used for role ambiguity, the relationships with emotional exhaustion and depersonalization would also be significant and consistent with other research.

Peiró et al (2001) studied relationships between role stressor and burnout among health care professionals. They used a time-interval of one year. Our results are consistent for role conflict which is positively related to emotional exhaustion and depersonalization. Neither of the studies found a significant relationship between role ambiguity and depersonalization. However, in our study we also found a positive relationship between role conflict and diminished personal accomplishment and we did not find relationships between role ambiguity and emotional exhaustion nor diminished personal accomplishment. Possible reasons for these differences could be the different time-lags used or related to the different kind of jobs and responsibilities.

Sleep is restorative for daily functioning, whereas sleep deprivation seems to make us more sensitive to emotional and stressful stimuli and events (Vandekerckhove & Cluydts, 2010). Fatigue is an acknowledged road safety harzard of a similar magnitude to alcohol while driving (Williamson et al., 2014). The research of Williamson et al. (2014) showed in a 2 hour simulation that drivers who rated themselves likely to fall asleep had a four time higher crash rate and the centerline crossings were nine times higher.

Based on this we expected that the quality of sleep had a moderating effect on the relationships between role stressors and the three components of a burnout. There is no support in this study for such a relationship. However, there is a direct effect between sleep and depersonalization and sleep and emotional exhaustion. This is consistent with the findings from Vela-Bueno et al. (2008), they found that there are sleep complaints present in burnout subjects. Their study provided support for a clear relationship between burnout and disturbed sleep, shown by the high prevalence of insomnia and poor sleep quality among physicians with high levels of burnout. Furthermore our findings are consists with the research from Söderström et al. (2012) whom found that to little sleep <6 hours is a main risk factor for burnout.

The behavior of dispatchers has an effect on the behavior of truck drivers. Dispatchers who exercise greater listening skills and who respond more effectively to drivers' concerns have lower driver turnover rates (Keller & Ozment,1999). Furthermore, the research of Keller (2002) showed that highly responsive dispatcher behavior toward drivers influences drivers to develop similar behavior and relationships with external customers. However more recent research from LeMay et al. (2013) provided evidence that the drivers attitude towards dispatchers or managers had no influence on the intention to quit a company. They suggest that the relationship between drivers and the firm have changed, probably because of the extensive use of new technology. Based on these new results they call for future research to look at the relationship between drivers and dispatchers and drivers and top management.

Kemp et al. (2013) identified that further research is needed in assessing if the emotional intelligence of dispatchers might be adroit in detecting the burnout syndrome in drivers. Therefore, we assessed if the perceived emotional intelligence of dispatchers has a moderating effect on the relationship between role stressors and burnout. The results of this study show that there is no significant moderating effect in this relationship. However, it does show that the perceived emotional intelligence has a direct relationship with all three components of a burnout. This contradicts the latest finding from LeMay et al. (2013) but is consistent with other researchers whom also found that the relationship between drivers and dispatchers is important (Keller & Ozment, 1999; Keller 2002, Fournier et al., 2012).

In the research of LeMay et al. (2013) the study took place at a large US truckload motor carrier. They interviewed drivers before and after they held the survey and identified the following possible reasons for their results. Due to technology in the drivers mind the dispatcher does not decide what the driver must do. Another possibility suggested by follow-up interviews and by the data is even simpler: the dispatchers scored so well in this data set that there was not enough variability in the data to show significance. Put another way, the dispatchers remain part of the glue that holds drivers to the firm, but they are so consistent they do not influence the decision to stay or leave (LeMay et al., 2013).

During the interviews and with the open feedback possibility several drivers informed us about possible causes for their stress. These possible causes are in line with indications from Crum and Morrow (2002) for driver fatigue, the occupational stressors reported by Shattel et al. (2010) and indicators reported by Kemp et al. (2013). In the second wave 11 of the most common causes were measured to identify if these causes are incidents or structural. It seems that the top stressors, aggression of other road users, finding a suitable resting place and enforcement of driving hours are all aspects of the job, and will most likely not differ if a truck driver switches from company.

5.3 Theoretical and practical implications

Our study has several theoretical and practical implications which we will discuss below.

Theoretical implications

This study addresses the call for further research to investigate the effect of role stressors to the components of burnout for truck drivers (Kemp et al., 2013). We used a time-lag of two months to investigate these relationships over time. Significant relationships have been found for role conflict and the components for burn-out, for role ambiguity there is only support for the relationship with diminished personal accomplishment.

In addition to the role stressors we added the quality of sleep in our model and found direct significant relationships to emotional exhaustion and depersonalization. The research from Söderström et al.(2012) was conducted at an IT company, and the research from Vela-Bueno et al. (2008) among physicians. Our study suggests that these findings also counts for truck drivers.

It is well known that the behavior of dispatchers has an impact on the behavior of truck drivers. This has been linked to the intention to quit a company (Keller & Ozment, 1999; Keller 2002, Fournier et al., 2012) and to behaviors to customers (Keller 2002). Kemp et al. (2013) suggested to take the emotional intelligence of dispatchers into account to investigate whether they might be adroit in detecting the burnout syndrome in drivers. We tested the

perceived emotional intelligence of dispatchers in our model and found that this has a significant relationship to all three components of burnout.

Several role stressors for truck drivers have been mentioned in the literature (Crum & Morrow, 2002; Shattel et al., 2010; Kemp et al., 2013). To the best of our knowledge we are the first to quantify these stressors and ask the driver from several topics on a Likert scale how much stress they experience because of these topics. This gives researchers, government and management an idea how to prioritize dealing with these stressors.

Practical implications

The biggest challenge in the road transport sector in 2017 is driver shortage (Logistiek.nl). Lemay et al. (1993) mentioned that it appears that long-haul drivers push themselves to a form of burnout, and then drop from the firm or exit the industry for a while. Our study finds that the top three stressors for truck drivers are industry related and therefore if this would be a reason to quit, it would mean that drivers would need to search for another industry.

Government

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 which involves driving.

Finding a suitable resting place, the enforcement of driving hours and the implementation of the digital tachograph seems to go hand in hand. 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 1 minute, which is shown on the digital tachograph the police officers are forced to give a fine. Providing more parking space for truck drivers might reduce these stressors.

Trucking industry implications

Sleep 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 (2003) working in regular shifts allows for a better sleeping pattern which reduces fatigue problems. Also the offering of secured parking places could allow truck drivers to sleep better, when they know that they, the truck and cargo are safe.

Adams-Guppy and Guppy (2003) have done a survey regarding driver fatigue risk assessment and management. They suggest, that where feasible, more flexible approaches to managing the scheduling and sequencing of deliveries assisted drivers in managing their own fatigue problems through appropriate break-taking. Given the impact on burnout, and the additional risk on an accident (Williamson et al., 2014) we recommend the management to actively support this to reduce sleep problems.

Drinking alcohol the night before work has been linked to increased fatigue problems (Adams-Guppy and Guppy 2003). The management can invest in safety trainings, briefings and or flyers to make drivers aware about this risk.

The perceived emotional intelligence of dispatchers has a direct effect on the three components of a burnout. Positive behavior from dispatchers towards drivers has been

linked to have a positive effect on how drivers behave towards customers (Keller, 2002) . Furthermore the behavior has been linked to intention to quit the company by drivers (Keller & Ozment, 1999; Keller, 2002; Fournier et al., 2012).

The management should consider the following actions: first offer training for the existing dispatchers so that their behavior towards drivers improves, second make certain that the amount of drivers per dispatcher is manageable, dispatchers might become less patient and pay less attention to the drivers need if they are too busy. As a next step the hiring policy for dispatchers might be adjusted to take into consideration the emotional intelligence. Even without formal training dispatchers can be made aware of their effect on drivers. A bonus towards dispatchers who treat drivers with respect can also be a way to motivate this behavior.

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 as well.

5.4 Limitations and recommendations for further research

Although this research makes important contributions in the study of role stressors, quality of sleep of truck drivers and perceived emotional intelligence of dispatcher perceived by truck drivers, future studies might further assess the impact of role ambiguity. In our research role ambiguity is measured as one construct, however several researchers (King & King, 1990; Singh, 1991) suggest role ambiguity is multifaceted in nature. By measuring role ambiguity as a multifaceted item a better understanding of the impact can be gained.

Further, additional studies might examine the effectiveness of suggested practical recommendations regarding sleep or perceived emotional intelligence of the dispatcher. One could for example do a case study with time lags where between T1 and T2 a mediating effect takes place. For example, a training for dispatchers or the introduction of a more regular schedule for the truck drivers.

Our study used a time lag with two intervals. The time between the first and the second measurement was two months. To get a better understanding of this phenomenon over time more time intervals and/or a bigger distance between measurements can be used.

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7. Appendix

7.1 Questionnaire

Introductie

Beste Chauffeur,

Graag wil ik onderzoeken of de huidige werkomstandigheden van chauffeurs enige mate van invloed hebben op werk gerelateerde stress ervaringen en/of burnout bij de beroepsgroep van chauffeurs.

Om hierachter te komen wil ik u vragen om uw medewerking en of u onderstaande vragenlijst zo volledig mogelijk wilt invullen en retourneren.
De antwoorden worden anoniem verwerkt en worden niet individueel naar uw werkgever verstuurd.

Het onderzoek is mijn afstudeeropdracht voor de universiteit, de uitkomst daarvan kan na anonieme verwerking leiden tot gerichte adviezen richting minister Asscher en de werkgevers in de transportsector, waarbij uw belangen worden weergegeven.

Voor het onderzoek is het noodzakelijk dat dezelfde vragenlijst over ongeveer twee maanden nog een keer ingevuld wordt. Als u de vragenlijst twee keer volledig invult kunt u kans maken op een Bol.com cadeaukaart van €25,-.

Het invullen van de vragenlijst zal ongeveer 20-25 minuten in beslag nemen.

Barry de Waard, master student aan de Open Universiteit

Algemeen

Wat is uw geslacht? Man / Vrouw

Wat is uw leeftijd? Jaar

Heeft u een partner Ja / Nee

Hoeveel kinderen heeft u?

Hoe langt werkt u voor dit bedrijf? Jaar

Welke dagdelen werkt u? ◯ Nacht ◯ Ochtend ◯ Middag ◯ Avond

Zijn uw diensten regelmatig? Ja / Nee

Wat voor soort goederen vervoert u?

◯ 0 Landbouwproducten; levende dieren

◯ 1 Voedingsproducten en veevoeder

◯ 2 Vaste minerale brandstoffen

◯ 3 Aardolie en aardolieproducten

◯ 4 Ertsen en metaalresiduen

◯ 5 Metalen, metalen halffabricaten

◯ 6 Ruwe mineralen; bouwmaterialen

◯ 7 Meststoffen

◯ 8 Chemische producten

◯ 9 Overige goederen en fabricaten

Slaap

Hoeveel uur slaapt u gemiddeld per nacht? Uur per nacht

Hoeveel nachten bent u gemiddeld per week onderweg voor het werk?

Heeft u de afgelopen twee maanden last gehad van een van de volgende klachten?
1> nooit
2> zeldzaam (af en toe)
3> soms (meerdere keren per maand)
4> vaak (1-2 keer per week)
5> meestal (3-4 keer per week)
6> altijd

Moeilijkheden met in slaap vallen	1	2	3	4	5	6
Herhaaldelijk wakker worden en daarna moeilijk in slaap vallen	1	2	3	4	5	6
Vroegtijdigwakkerworden	1	2	3	4	5	6
Verstoorde/rustelozeslaap	1	2	3	4	5	6
Moeilijkheden om wakker te worden	1	2	3	4	5	6
Nietuitgerustwakkerworden	1	2	3	4	5	6
Het gevoel uitgeput te zijn na het wakker worden	1	2	3	4	5	6
Snakken naar adem tijdens het slapen	1	2	3	4	5	6
Te weinig slaap (minder dan 6 uur)	1	2	3	4	5	6

Werkomstandigheden

Bij de volgende vragen kunt u aangeven op een schaal van 1 tot en met 7 in hoeverre u het eens bent met de stelling. *

1 > zeer mee oneens
2 > mee oneens
3 > enigszins mee oneens (of een klein beetje mee oneens)
4 > neutraal
5 > enigszins mee eens (of een klein beetje mee eens)
6 > mee eens
7 > zeer mee eens

Ik krijg rit opdrachten zonder de middelen om de opdracht uit te voeren	1	2	3	4	5	6	7
Ik moet regel(s) of beleid negeren om een vracht te kunnen leveren	1	2	3	4	5	6	7
Ik werk met twee of meer afdelingen die verschillend werken	1	2	3	4	5	6	7
Ik ontvang tegenstrijdige verzoeken van twee of meer mensen vanuit verschillende afdelingen.	1	2	3	4	5	6	7
Ik doe dingen die aanvaardbaar zijn voor de ene persoon, maar niet voor de ander	1	2	3	4	5	6	7
Ik ontvang opdrachten zonder de benodigde steun vanuit het bedrijf.	1	2	3	4	5	6	7
Ik moet dingen van het bedrijf doen die beter op mijn manier gedaan zouden kunnen worden.	1	2	3	4	5	6	7
Ik ben te veel tijd kwijt aan onnodige zaken.	1	2	3	4	5	6	7
Ik voel me zeker over de mate van bevoegdheid/gezag die ik heb.	1	2	3	4	5	6	7
Ik weet precies wat er van mij verwacht wordt.	1	2	3	4	5	6	7
De uitleg over wat er uitgevoerd moet worden is duidelijk.	1	2	3	4	5	6	7

Elementen van werkstress/burnout

Bij de volgende vragen kunt u aangeven op een schaal van 1 tot en met 6 in hoeverre u het eens bent met de stelling. *

1 > zeer mee oneens
2 > mee oneens
3 > enigszins mee oneens (of een klein beetje mee oneens)
4 > enigszins mee eens (of een klein beetje mee eens)
5 > mee eens
6 > zeer mee eens

Werken op locatie vind ik heel vermoeiend	1	2	3	4	5	6
Ik vind dat ik veel te hard werk op locatie	1	2	3	4	5	6
Ik voel me emotioneel uitgeput door de druk die van buitenaf op mij gelegd wordt	1	2	3	4	5	6
Ik voel me ontmoedigd door de besluiten van het topmanagement.	1	2	3	4	5	6
Ik voel me opgebrand doordat ik probeer te voldoen aan de verwachtingen van het management.	1	2	3	4	5	6
Ik voel me alsof ik medewerkers op locatie behandel alsof ze geen personen waren, maar “objecten”.	1	2	3	4	5	6
Ik voel me onverschillig tegenover sommige van de medewerkers op locatie.	1	2	3	4	5	6
Ik voel me alsof ik onvoldoende bezorgdheid heb voor mijn leidinggevende.	1	2	3	4	5	6
Ik voel me alsof ik me steeds botter opstel tegenover mijn leidinggevende.	1	2	3	4	5	6
Ik vind dat ik effectief voldoe aan de eisen op locatie	1	2	3	4	5	6
Ik vind dat ik de problemen van de klant effectief oplos.	1	2	3	4	5	6
Ik vind dat ik waarde toevoeg aan mijn bedrijf.	1	2	3	4	5	6
Ik vind dat mijn leidinggevende mij waardeert voor mijn toevoeging aan het bedrijf.	1	2	3	4	5	6
Ik vind dat de mensen op locatie mijn medewerking echt waarderen.	1	2	3	4	5	6
Ik vind dat ik een positieve invloed heb op mijn werkzaamheden.	1	2	3	4	5	6

Gedrag van de planner

Bij de volgende vragen kunt u aangeven op een schaal van 1 tot en met 7 in hoeverre u het eens bent met de stelling. *

1 > zeer mee oneens
2 > mee oneens
3 > enigszins mee oneens (of een klein beetje mee oneens)
4 > neutraal
5 > enigszins mee eens (of een klein beetje mee eens)
6 > mee eens
7 > zeer mee eens

De planner en ik hebben een goede verstandhouding	1	2	3	4	5	6	7
Ik kan altijd terecht bij de planner voor vragen of problemen	1	2	3	4	5	6	7
De planner is gevoelig voor de gevoelens en emoties van anderen.	1	2	3	4	5	6	7
De planner heeft een goed begrip van de emoties van de mensen om hem heen.	1	2	3	4	5	6	7
De planner kan zijn humeur controleren en moeilijke situaties rationeel aanpakken.	1	2	3	4	5	6	7
De planner heeft een goede controle over zijn eigen emoties.	1	2	3	4	5	6	7

Afsluiting

Voor de tweede meeting vragen we u om uw e-mail adres zodat we u een herinnering kunnen sturen over ongeveer twee maanden. Bij het terugsturen van de tweede enquête is het tevens mogelijk om aan te geven of u kans wilt maken op de Bol.com cadeaukaart.

Uw E-mail adres is:

Voor vragen/opmerkingen kunt u onderstaande box gebruiken of contact met mij opnemen via b.dewaard@studie.ou.nl.

Extra vragen in de tweede meting

Bij de volgende vragen kunt u aangeven op een schaal van 1 tot en met 6 in hoeverre u het eens bent met de stelling.

1 > zeer mee oneens
2 > mee oneens
3 > enigszins mee oneens (of een klein beetje mee oneens)
4 > enigszins mee eens (of een klein beetje mee eens)
5 > mee eens
6 > zeer mee eens

Door onderstaande oorzaak heb ik werkstress ervaren:

De invoering van de digitale tachograaf	1	2	3	4	5	6	NVT
De handhaving van de rijtijdenwet	1	2	3	4	5	6	NVT
Verschillende veiligheidsvoorschriften op verschillende laad/los locaties	1	2	3	4	5	6	NVT
Lengte van werkdag	1	2	3	4	5	6	NVT
Geen mogelijkheid om part-time te werken	1	2	3	4	5	6	NVT
Automatisering (GPS, plansoftware)	1	2	3	4	5	6	NVT
Beperkte of kwalitatief onvoldoende hulpmiddelen op laad/los locatie	1	2	3	4	5	6	NVT
Rekening houdend met privé situaties om op tijd thuis te zijn	1	2	3	4	5	6	NVT
Vinden van een geschikte rustplaats	1	2	3	4	5	6	NVT
Agressie van andereweggebruikers	1	2	3	4	5	6	NVT
Bang voor het verliezen van baan door een goedkopere chauffeur	1	2	3	4	5	6	NVT

7.2 Outer loadings

	DP	RPA	EE	PEI	Sleep	RA	RC
T1_EIP1				0.829			
T1_EIP2				0.861			
T1_EIP3				0.798			
T1_EIP4				0.901			
T1_EIP5				0.825			
T1_EIP6				0.833			
T1_RA1						0.596	
T1_RA2						0.754	
T1_RA3						0.819	
T1_RC1							0.704
T1_RC2							0.731
T1_RC3							0.765
T1_RC4							0.821
T1_RC5							0.777
T1_RC6							0.805
T1_RC7							0.800
T1_RC8							0.763
T1_Sleep1					0.697		
T1_Sleep2					0.775		
T1_Sleep3					0.578		
T1_Sleep4					0.771		
T1_Sleep5					0.537		
T1_Sleep6					0.808		
T1_Sleep7					0.829		
T1_Sleep8					0.542		
T1_Sleep9					0.617		
T2_DP1	0.819						
T2_DP2	0.829						
T2_DP3	0.835						
T2_DP4	0.845						
T2_DPA1		0.429					
T2_DPA2		0.457					
T2_DPA3		0.734					
T2_DPA4		0.793					
T2_DPA5		0.784					
T2_DPA6		0.781					
T2_EE1			0.696				
T2_EE2			0.792				
T2_EE3			0.887				
T2_EE4			0.811				
T2_EE5			0.896				

7.3 Direct effects

Sleep → Components of burnout

Coefficient of determination	Original Sample	Sample Mean	STDEV	T Statistics > 1,96
depersonalization	0.189	0.199	0.049	3.842*
diminished personal accomplishment	0.128	0.148	0.036	3.513*
emotional exhaustion	0.290	0.300	0.049	5.973*

Table 13: Coefficient of determination * P Values <0,001

Path coefficients	Original Sample	Sample Mean	STDEV	T Statistics > 1,96	P Values < 0,05
Sleep -> depersonalization	0.439	0.447	0.055	7.981	0.000
Sleep -> diminished personal accomplishment	0.363	0.384	0.067	5.436	0.000
Sleep -> emotional exhaustion	0.542	0.549	0.044	12.215	0.000

Table 14: Path coefficients

Cohen`s f^2	Original Sample (O)
quality of sleep of the truck drivers -> depersonalization	0.238
quality of sleep of the truck drivers -> diminished personal accomplishment	0.152
quality of sleep of the truck drivers -> emotional exhaustion	0.416

Table 15: Cohen`s f^2

Perceived emotional intelligence dispatcher → Components of burnout

Coefficient of determination	Original Sample	Sample Mean	STDEV	T Statistics > 1,96
depersonalization	0.272	0.279	0.057	4.802*
diminished personal accomplishment	0.331	0.342	0.050	6.629*
emotional exhaustion	0.289	0.296	0.054	5.346*

Table 16: Coefficient of determination * P Values <0,001

Path coefficients	Original Sample	Sample Mean	STDEV	T Statistics > 1,96	P Values < 0,05
PEI dispatchers -> depersonalization	0.525	0.529	0.054	9.788	0.000
PEI dispatchers -> diminished personal accomplishment	0.578	0.586	0.043	13.556	0.000
PEI dispatchers -> emotional exhaustion	0.541	0.545	0.050	10.902	0.000

Table 17: Path coefficients

Cohen`s f^2	Original Sample (O)
PEI dispatchers -> depersonalization	0.380
PEI dispatchers -> diminished personal accomplishment	0.502
PEI dispatchers -> emotional exhaustion	0.413

Table 18: Cohen`s f^2