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Job stress, motivation, and job performance: direct and indirect relationship

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ABSTRACT

Purpose – Stress is in everyone's life. Everyone has experienced stress, even stress is sometimes sought to improve performance. The results of research on stress and performance are still many contradictions. It is based on the inverted-U theory and several approaches to stress.

Aims – This study examined the relationship and the effect of stress on performance directly and mediated by motivation.

Methodology – This study used a survey with a questionnaire distributed to nurses in several hospitals in Yogyakarta and its surroundings. By using 292 nurses who had filled out the questionnaire completely, the validity was tested with factor analysis and internal consistency with Cronbach Alpha.

Findings – The results of testing the two models using structural equation modeling (SEM) found that motivation affected job stress and performance differently. Job stress was unrelated and had no direct effect on performance. The second model showed that motivation especially extrinsic motivation mediated the relationship between job stress and performance. An in-depth discussion of the results of this study is discussed at the end of this article.

Limitations of the study – This study used a self-assessment that has the risk of causing common method variance and used cross-sectional data that can interfere with testing the mediation model.

Practical implications – During the pandemic, the extrinsic motivation that drives the nurses to work hard is the environmental conditions, namely the patients who need help. Recruitment of nurse volunteers, socialization about COVID-19 and how to handle and prevent it need to be massively given to reduce the job stress of nurses.

Originality/ value – This research was conducted during a pandemic with a very high addition of confirmed cases of COVID-19. The results of this study contribute to enriching knowledge about human resource management, especially regarding stress and employee motivation in times of crisis.

KEY WORDS

extrinsic motivation, intrinsic motivation, job stress, performance

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1 INTRODUCTION

The COVID-19 pandemic that has lasted for almost two years has caused various parties to experience stress. Health workers who work in hospitals are people who experience stress at work. They are required to serve patients, most of whom are COVID-19 patients. Stress is everywhere and is a part of human life. Therefore, despite stress, people must continue to pursue goals for survival (Maier & Watkins, 2010). This is evidenced by previous researchers who found that stress is related to motivation and performance (Barney & Elias, 2010; Chan et al., 2018; Jones et al., 2020; Kuvaas et al., 2017).

Several previous researchers have found that stress is indeed related to performance (Crego et al., 2016; Kotter et al., 2017; Lin et al., 2020; Ranasinghe et al., 2017). Job stress can be positively or negatively related to job performance (Abolghasemi & Varaniyab, 2010; Samaha & Hawi, 2016). At a job stress level that is not too high, performance can increase, even job stress is sought to improve performance (Robbins & Judge, 2015). Therefore, stress can motivate people to be better. However, a high level of job stress actually reduces performance. Anderson et al. (2019) found that stress affects performance, while Lin et al. (2020) found that the relationship between stress and performance is bidirectional. Meanwhile, Bello and Gumarao (2016) found that stress was not correlated with performance. The findings of research by Jamieson et al (2016) stated that stress does not always harm performance.

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According to Lin et al. (2020), although it can reduce performance, stress actually increases motivation. In contrast, Korkmaz and Ipekci (2015) found that motivation had a negative effect on stress. This is because motivation can be caused by individual internal factors or external factors. Intrinsic motivation (IM) can prevent stress but extrinsic motivation (EM) increases stress (Ganster et al., 2011). The love for work that is felt to be fun will certainly make people not experience stress, while motivation caused by external forces will cause work stress. The relationship between IM and EM is still unclear, but IM has always been assumed to be independent of EM (Bowles & Polania-Reyes, 2012; Heinz, 2015). Lemos and Verissimo (2014) found that IM and EM are not contradictory, but can coexist. In general, IM and EM are correlated, although the relationship between the two is difficult to explain (Kuvaas et al., 2017).

Previous studies have proven that motivation is related to performance and affects performance (e.g., Cerasoli et al., 2014; Cetin, 2015; Dogan, 2017; Kori et al., 2016). Cerasoli et al. (2014) emphasize that IM and EM must interact to improve performance. Job stress is often seen as a motivator because it can increase the sense of urgency. If this is the case, then job stress can increase performance. However, if stress is prolonged, boredom will cause performance to decline. Conversely, pressure to achieve high performance can cause job stress to increase. This study aims to broaden understanding and prove the relationship between stress, especially job stress, motivation and perceived performance directly and indirectly, by testing the model of the relationship between these variables. This proof needs to be done because there is a causal relationship between motivation, stress, and performance (Bonneville-Roussy et al., 2017). In addition, because there are still many disagreements among researchers, especially regarding the effect of job stress on performance, research that examines the relationship and influence of the two constructs is still needed.

2 LITERATURE REVIEW AND HYPOTHESES DEVELOPMENT

Job stress is an individual's reaction to environmental characteristics that threaten emotionally and physically (Jamal, 2007). Job stress is a dangerous physical and emotional response that occurs when job requirements do not match the employee's abilities. Many things can be caused by stress, such as performance, physical and mental health, anger, and various psychological conditions of people (Greenberg & Barron, 2008). Job stress can pose challenges or threats to individual well-being. Stress can be experienced anywhere, whether at home, school, or at work. Job stress can be caused by role conflict, role ambiguity, or psychological problems (Barney & Elias, 2010). Therefore, job stress can reduce motivation and performance at work (Yozgat et al., 2013). Other researchers have found that job stress can increase motivation and increase or decrease performance (Lin et al., 2020).

Stress on several levels consumes time, energy, and individual attention, so it can hinder performance. High stress causes individual perceptions to narrow, ignore information, and reduce performance. Stress also causes physiological responses that can inadvertently reduce performance (Muse et al., 2003). On the other hand, some researchers have found that low stress causes no challenge so that stress actually reduces performance and high stress can optimize performance because it feels challenged. Meanwhile, the inverted-U theory states that increasing stress will be good up to a certain point (Muse et al., 2003). The center of the inverted-U curve is the optimal stress. Stress levels below that point cause boredom and low performance. Based on this theory, stress can increase or decrease motivation and performance, but it can also have no effect on these two variables.

Although researchers have expressed the relationship between job stress and job performance for almost a century, there is still controversy about the relationship between the two, whether there is a negative linear relationship (stress decreases performance), a positive linear relationship (stress increases performance), an inverse U relationship (at the level or type of performance, certain types of stress are needed to improve performance and at certain levels or types of stress reduce performance), or there is no relationship between stress and performance (Jamal, 2007). Several researchers have found that stress reduces performance (Applebaum et al., 2010; Kotter et al., 2017; Olusegun et al., 2014; Yozgat et al., 2013). However, some researchers have found that stress can actually increase performance (Crego et al., 2016; Henderson et al., 2012; Weerda et al., 2010). Several other researchers have found that stress is not correlated with performance (Bello & Gumarao, 2016; Jamal, 2007; Samaha & Hawi, 2016). Meanwhile, several researchers found that the relationship between stress and performance was mediated by other variables (Applebaum et al., 2010; Fried et al., 2008; Henderson et al., 2012; Yozgat et al., 2013).

Furthermore, job performance is an individual's performance related to work and job demands, mission and organizational goals (Yozgat et al., 2013). Besides being influenced by job stress, a factor that has been widely proven to affect performance is motivation (Byron & Khazanichi, 2012; Cerasoli et al., 2014; Fischer et al., 2019; Taylor et al., 2014). Motivation is often referred to as the heart of organizational behavior because motivation affects performance and productivity (Amabile & Pratt, 2016; Cerasoli et al., 2014; Dogan, 2017; Fischer et al., 2019). However, motivation was also found to be unrelated to performance (Cetin, 2015). Motivation is the desire

to do something. Motivation that provides direction, intensity, and persistence at work can be categorized as intrinsic motivation (IM) and extrinsic motivation (EM) (Cerasoli et al., 2014; Deci et al., 2017). Individuals are intrinsically motivated because of themselves, for example feeling comfortable at work or being interested in work. Meanwhile, individuals are extrinsically motivated due to external factors, either invitations, orders, or coercion from outside themselves. The power of motivation described for practice purposes as intrinsic or extrinsic will guide and direct performance behavior (Pinder, 2011). Employees are intrinsically motivated by interest and comfort in work and extrinsically driven by social considerations (Amabile & Pratt, 2016; Fischer et al., 2019).

When the motivation is intrinsic, the employee feels an interest in the job. This means that his attention is focused on his intense and persistent effort so that his performance improves. In other words, actions in their work are rewards for them (Cerasoli et al., 2014; Shin & Grant, 2019). IM expands its business based on its interest in work (Menges et al., 2017). IM has a positive impact on performance (Cerasoli et al., 2014; De Jesus et al., 2013; Liu et al., 2016; Taylor et al., 2014). Meanwhile, extrinsically motivated behavior is regulated by instrumental gain and loss (Cerasoli et al., 2014). Furthermore, the effect of EM varies because it has multidimensionality (Ryan & Deci, 2020). EM can decrease performance (Byron & Khazanchi, 2012; Taylor et al., 2014). However, Cerasoli et al. (2014) proves that the interaction of IM and EM has an effect on performance. This is supported by Amabile and Pratt (2016) and Gerhart and Fang (2014).

IM and EM can predict employee outcomes when they are combined (Gerhart & Fang, 2014). Although IM and EM can coexist in influencing individuals, they are separate dimensions of motivation, one of which will dominate (Deci & Ryan, 2008). In addition, although IM and EM can operate simultaneously, existing research suggests that IM or EM will be more dominant (Weibel et al., 2010). The relationship between IM and EM is negative. If performance increases due to rewards, EM will increase as well as decrease IM (Bowles & Polania-Reyes, 2012; Dysvik et al., 2013; Weibel et al., 2010). IM is driven by personal needs and satisfaction and is based on pleasure, whereas EM is based on environmental control, feelings of obligation, reward, and punishment (Park et al., 2012). Based on the results of previous studies regarding the relationship between job stress, IM, EM, and job performance, the hypotheses tested in this study are:

H1: Job stress is negatively related to motivation (IM and EM).

H2: Job stress is negatively related to job performance.

H3: Motivation (IM and EM) is positively related to job performance.

H4: Motivation mediates the relationship between job stress and job performance.

3 METHODOLOGY

3.1 PARTICIPANTS

This research was conducted on nurses who are health workers at several hospitals in Yogyakarta and its surroundings, which was carried out from January to June 2021. In those months, COVID-19 cases in Indonesia experienced a spike as a result of the Christmas and New Year holidays, plus Eid holidays in May 2021. This condition becomes prolonged because the infecting virus mutates into new, more infectious variants. Nurses were under tremendous pressure due to the bed occupancy rate (BOR) above 50% and the increasing mortality rate of COVID-19 patients. Nurses were required to be able to serve patients who are mostly infected with the corona virus. Therefore, filling out the questionnaire by the nurses was done while they were taking a break from work. Of the 500 questionnaires sent to nurses in several hospitals, only 292 questionnaires were completely filled out. Therefore, this data analysis was performed on these 292 nurses.

3.2 MEASUREMENTS

This study used 4 variables, namely job stress, intrinsic motivation, extrinsic motivation, and perceived job performance. The job stress questionnaire was adopted from the article of Wu et al. (2018). For example, my work is very complicated and there is a heavy workload, with $\alpha = 0.925$. Intrinsic and extrinsic motivation questionnaires were adopted from the Guay et al. (2008). An example of an intrinsic motivation questionnaire was that I work because I think this job is interesting, with $\alpha = 0.912$. An example of an extrinsic motivation questionnaire was that I work because I think that this job was good for me, with $\alpha = 0.718$. Meanwhile, the job performance questionnaire which was the perceived performance was adopted from the article of Koopmans et al. (2013). For example, I can fulfill the responsibility, with $\alpha = 0.928$.

3.3 PROCEDURES

This study used a survey method with a questionnaire that uses a Likert Scale with a value of 1 for answers strongly disagree to a value of 5 for answers strongly agree. Questionnaires were distributed to 500 nurses caring for COVID-19 patients. After the questionnaire was filled out completely by the respondent, the questionnaire was sorted, separated between the completed and incomplete questionnaires. Incomplete questionnaires were discarded and not included in further testing. The complete questionnaire was inputted with excel and SPSS to test its validity and reliability. Testing the validity using confirmatory factor analysis with a minimum loading factor of 0.5 and reliability with internal consistency using Cronbach's Alpha of more than 0.7 (Hair et al., 2010). Furthermore, the correlation between research variables was tested using Pearson's Correlation. To test the model of the relationship between research variables used structural equation modeling (SEM) testing with a two-stage approach using AMOS (Byrne, 2010).

4 RESULTS

4.1 PRELIMINARY ANALYSIS

The results of the validity test show that the 14 job stress questions are valid (with a loading factor 0.582 to 0.840) and Cronbach's Alpha is 0.925. Furthermore, 5 valid intrinsic motivation questions (with loading factors 0.754 to 0.910) and 5 valid extrinsic motivation questions (with loading factors 0.523 to 0.748) and Cronbach's Alpha are 0.912 and 0.718, respectively. Meanwhile, 12 questions regarding perceived job performance are valid (with a loading factor 0.702 to 0.871) and Cronbach's Alpha is 0.928. Furthermore, the results of descriptive statistics and correlations between research variables are presented in Table 1 below.

Table 1: Descriptive Statistics and Correlation between Research Variables

	Mean	Std. Dev.	α	1	2	3	4
<i>Job Stress (1)</i>	2.885	0.7968	0.925	1.000			
<i>Intrinsic Motivation (2)</i>	3.825	0.5898	0.912	- 0.363**	1.000		
<i>Extrinsic Motivation (3)</i>	4.022	0.3949	0.718	- 0.294**	0.427**	1.000	
<i>Perceived Job Performance (4)</i>	3.840	0.5541	0.928	0.160	0.269**	0.318**	1.000

**significant at level 0.01

Table 1 shows that the correlations between research variables are significant, except for the correlation between job stress and perceived performance. Although not very strong, performance was positively related to IM and EM, while job stress was negatively related to IM and EM. Furthermore, the average intrinsic and extrinsic motivation and perceived job performance were high, while the average job stress was moderate. This showed that nurses did not feel too stressed at work. However, the mean extrinsic motivation was higher than intrinsic motivation. This showed that nurses were motivated to carry out their duties mainly due to external factors. The relationship between the two types of motivation and job stress was negative, while between the two types of motivation and perceived job performance was positive.

4.2 RELATIONSHIP MODEL TESTING RESULTS

The results of testing the relationship model using SEM found that there were at least two relationship models that fit the data between the four variables that produce the optimal suitability value. The first relationship model was the direct influence of both types of motivation on job stress and perceived job performance. The results of the first model test are presented in Table 2.

Table 2: Direct Effect of Motivation on Job Stress and Performance

Model 1	Standardized Regression Weights	Critical Ratio
Intrinsic Motivation → Job Stress	-0.069	-0.642
Extrinsic Motivation → Job Stress	-0.526**	-4.291
Intrinsic Motivation → Perceived Job Performance	-0.155	-1.322
Extrinsic Motivation → Perceived Job Performance	0.581**	4.351
Extrinsic Motivation → Intrinsic Motivation	0.705**	8.888

GFI = 0.965
CFI = 0.909
Chi-square = 22.906 df = 1
NFI = 0.908
IFI = 0.911
RMR = 0.011

Table 2 shows that extrinsic motivation increases performance and reduces work stress. Meanwhile, intrinsic motivation does not affect perceived job performance and job stress. The first model showed that extrinsic motivation played a more important role in improving performance (Fang & Gerhart, 2012) and reducing work stress (Cerasoli et al, 2016). Furthermore, extrinsic motivation can encourage an increase in intrinsic motivation. The first model also showed that there was no influence between job stress and perceived job performance. Furthermore, this study also examined motivation as a mediating variable in the relationship between job stress and job performance. The results of testing the relationship model are presented in Table 3.

Table 3: Motivation Mediates the Effect of Job Stress on Performance

Model 2	Standardized Regression Weights	Critical Ratio
Job Stress → Intrinsic Motivation	-0.440**	-7.535
Job Stress → Extrinsic Motivation	-0.325**	-4.608
Intrinsic Motivation → Perceived Job Performance	-0.155	-1.322
Extrinsic Motivation → Perceived Job Performance	0.581**	4.351
Intrinsic Motivation → Extrinsic Motivation	0.705**	8.888

GFI = 0.965
CFI = 0.909
Chi-square = 22.906 df = 1
NFI = 0.908
IFI = 0.911
RMR = 0.011

Table 3 shows that job stress has a significant effect on intrinsic and extrinsic motivation (Barney & Elias, 2010), but only extrinsic motivation has an effect on perceived job performance (Cerasoli et al., 2016; Kuvaas et al., 2016). If in the first model extrinsic motivation affects intrinsic motivation, then in this second model intrinsic motivation affects extrinsic motivation. In other words, the two types of motivation influence each other (Amabile & Pratt, 2016; Gerhart & Fang, 2014).

5 DISCUSSION

Motivation is a fundamental component of human performance and is the focus of attention of organizations and industry. Many studies have shown that motivation is related to performance and affects performance (e.g., Cerasoli et al., 2014; Dogan 2017; Gerhart & Fang, 2014; Kori et al., 2016; Menges et al., 2017; Ryan & Deci, 2020; Shin & Grant, 2019; Taylor et al., 2014). Individuals who are motivated either because of their relationship to work, because of their desire to get rewards, or their fear of getting punished, can encourage the achievement of better performance. In other words, both IM and EM can improve performance. This confirms the results of the study of Kuvaas et al. (2016) and Cerasol et al. (2016), but contrary to the results of the study of Dysvik et al. (2013) who found that only IM improved performance.

The results of this study strengthen the results of previous studies that motivation was positively related to performance and negatively related to job stress (e.g., Jones et al., 2020; Kori et al., 2016; Kuvaas et al., 2017; Park et al., 2012; Patrick & William, 2012). The results of the first model test showed that EM had an effect on both job stress and performance. The effect of EM on job stress was negative, while on positive performance, which means EM can reduce job stress and improve performance. This supports the results of research which also found that EM actually increases performance (e.g., Cerasoli et al., 2016; Kuvaas et al., 2016). Meanwhile, the results of the second model test showed that job stress can reduce motivation, both IM and EM. The second model supports the results of research by Barney and Elias (2010), which found that job stress has a negative effect on motivation. This is contrary to the results of research by Golboa et al. (2008), Lin et al. (2020), and Radcliffe and Lester (2003) who actually found that job stress was a source of employee motivation. However, both the first and second models suggest that IM and EM must interact in influencing performance. This confirms the results of previous studies (e.g., Amabile & Pratt, 2016; Cerasoli et al., 2014; Gerhart & Fang, 2014).

Meanwhile, job stress is also a major problem for organizations and employees because it can reduce performance. Both employees and organizations always want to reduce the work stress of their employees. The results of this study did not find any relationship between job stress and performance. This contradicts the results of previous studies (e.g., Anderson et al., 2019; Applebaum et al., 2010; Ashadi & Damiri, 2013; Weerda et al., 2010; Yozgat et al., 2013). Individuals who are motivated to work well are less likely to feel stress at work. The results of this study also found an inverse relationship between motivation and work stress.

Furthermore, the results of this study found that job stress was not related to performance and had no effect on the performance of nurses. The results of this study confirm the results of Bello and Gumarao's research (2016). Contrary to popular belief, stress does not always harm performance (Jamieson et al., 2013). The results of this study found that the relationship between job stress and performance was mediated by another variable, namely motivation. This supports previous research which found that the relationship between job stress and performance is mediated by other variables (e.g., Applebaum et al., 2010; Fried et al., 2008; Henderson et al., 2012; Yozgat et al., 2013).

The results of this study found that the level of job stress of the nurses was not too high. The pandemic that has been running for more than a year has caused nurses to get used to the large number of COVID-19 patients. The number of patients who are confirmed positive for COVID-19 every day has not shown a decline. Even after the holiday, the number of patients infected with the virus is increasing. This prolonged condition causes nurses to get used to it and feel less pressure.

There is no relationship between job stress and performance because there is a psychological contract approach between the individual and the organization where he works. In this case, individuals are seen as rational beings who pay attention to performance because they know that they are paid to do the work. This can be seen in the mean value of EM which is higher than IM. What's more, in a pandemic, nurses feel called to work hard to save patients infected with COVID-19. The nurses then ignore the difficulties that create barriers to better performance, regardless of what is happening in their work environment. These nurses will not let their performance be affected by the state of the work environment. Interest or not, like it or not, nurses just feel called to perform because they want the pandemic to end soon. Their performance will remain the same whether there is high chronic work stress or no work stress. It also shows that work is not considered as the main interest in their life. They prioritize the safety of patients during this pandemic.

The results of this study indicate that job stress is not seen as a way of increasing performance or decreasing performance, but as a neutral state for individual performance. Job stress is not always caused by factors related to work motivation, but can be caused by role conflict and role ambiguity or because of psychological factors. Sometimes job stress has an effect on performance, both positive and negative, but sometimes it has no effect. This is in accordance with the inverted-u theory which states that stress can be increased to a certain point which has an effect on increasing performance. However, certain levels of stress actually cause boredom and are not related to performance. The pandemic condition that has lasted for almost two years has caused prolonged job stress for nurses, thereby reducing motivation and having no effect on the performance of the nurses. The nurses, even though they are working as hard as they can to save hundreds or even thousands of lives, they are also already bored because this pandemic will not end soon.

The COVID-19 pandemic has been difficult for nurses, not only because of the large number of infected people, but because the disease is relatively unknown. Although it is not proven to have an effect on performance, job stress must be handled properly. Stress management of nurses must be done. At the peak of the pandemic, the Indonesian government has recruited many volunteers to help nurses, both in hospitals and in isolation places. However, socialization about the disease, how to prevent and treat it is still needed so that there is no excessive fear and results in high levels of job stress. Hospital management and government support is needed, especially in providing personal protective equipment and providing adequate rest time for health workers.

6 CONCLUSION

The COVID-19 pandemic has an effect on the job stress of nurses which reduces their motivation. Job stress has no effect on performance, so it can not be relied upon as a factor that affects the increase or decrease in performance. Intrinsic motivation, which is relied on to improve performance and reduce job stress, still needs to be proven true, because in this study it is extrinsic motivation that can improve performance and reduce job stress. Perhaps it is more appropriate to say that although independent, both types of motivation must be developed to improve employee performance and reduce job stress. The pandemic that has been going on for more than a year is boring for nurses. Jobs that contain very high stressors have made them bored, so it has no effect on the performance of nurses. Motivational factors, especially those from the environment, are factors that can improve their performance.

This research has several weaknesses. First, the use of motivation, job stress, and employee performance questionnaires using self-ratings allows for a common method bias that could weaken the correlation test. The use of supervisor-rating in assessing the performance of nurses can eliminate this bias (Podsakoff et al., 2012). Second, the data used is cross-sectional, so it is not appropriate to test the mediating model. Future research needs to use longitudinal data so that it can be more precise in testing the mediation model. Third, the data used needs to be added more so that more precise testing can be carried out.

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REFERENCES

- Abolghasemi, A., & Varaniyab, S.T. (2010). Resilience and perceived stress: Predictors of life satisfaction in the student's of success and failure. *Procedia-Social and Behavioral Sciences*, 5, 748-752. DOI: 10.1016/j.sbspro.2010.07.178.
- Amabile, T.M., & Pratt, M.G. (2016). The dynamic componential model of creating and innovation in organizations: Making progress, making meaning. *Research in Organizational Behavior*, 36(1), 157-183. DOI: 10.1016/j.rriob.2016.10.001.
- Anderson, G.S., Di Nota, P.M., Metz, G.A.S., & Andersen, J.P. (2019). The impact of acute stress physiology on skilled motor performance; Implications for policing, *Frontiers in Psychology*, 10, Article 2501, 1-11. DOI: 10.3389/fpsyg.2019.02501.
- Applebaum, D., Fowler, S., Fiedler, N., Osinubi, O., & Robson, M. (2010). The impact of environmental factors in nursing stress, job satisfaction, and turnover intention. *Journal of Nursing Administration*, 4, 323-328. DOI: 10.1097/NNA.0b013e3181e9393b
- Arshadi, N., & Damiri, H. (2013). The relationship of job stress with turnover intention and job performance: Moderating role of OBSE. *Procedia-Social and Behavioral Science*, 84(2013), 706-710. DOI: 10.1016/j.sbspro.2013.06.631.
- Barney, C.E., & Elias, S.M. (2010). Flex-time as a moderator of the job stress-work motivation relationship: A three nation investigation. *Personnel Review*, 39(4), 487-502. DOI: 10.1108/004834810110.45434.
- Bello, D., & Gumarao, M. (2016). Stress, coping strategies, and academic performance of dentistry students. *AUP Research Journal*, 19(2), 36-39.
- Bonneville-Roussy, A., Evans, T., Verner-Filion, J., Vallerand, R.J., & Bouffard, T. (2017). Motivation and coping with the stress of assessment: Gender differences in outcomes for university students. *Contemporary Educational Psychology*, 48(2017), 28-41. DOI: 10.1016/j.cedpsch.2016.08.003.
- Bowles, S., & Polania-Reyes, S. (2012). Economic incentives and social preferences: Substitutes or complements? *Journal of Economics Literature*, 50(2), 368-425. DOI: 10.2307/23270024.
- Byrne, B. M. (2010). *Structural Equation Modeling with AMOS: Basic Concepts, Applications, and Programming*, 2nd edition. New York: Routledge, Francis & Taylor Group.
- Byron, K. & Khazanchi, S. (2012). Rewards and creative performance: a meta-analytic test of theoretically derived hypothesis. *Psychological Bulletin*, 138, 809-630. DOI: 10.1037/a0027652.
- Cerasoli, C.P., Nicklin, J.M., & Ford, M.T. (2014). Intrinsic motivation and extrinsic incentives jointly predict performance: A 40-year meta-analysis. *Psychological Bulletin*, 140(4), 980-1008. DOI: 10.1037/a0035661.
- Cerasoli, C.P., Nicklin, J.M., & Nassrelrgawi, A.S. (2016). Performance, incentives, and needs for autonomy, competence, and relatedness: A meta-analysis. *Motivation and Emotion*, 40(6), 781-813. DOI: 10.1007/s11031-016-9578-2.
- Cetin, B. (2015). Academic motivation and self-regulated learning in predicting academic achievement in college. *Journal of International Education Research*, 11(2), 95-106.
- Chan, I.Y.S., Leung, M.Y., & Liana, Q. (2018). The roles of motivation and coping behaviors in managing stress: Qualitative interview study of Hong Kong expatriate construction professionals in mainland China. *International Journal of Environmental Research and Public Health*, 15(561), 1-24. DOI: 10.3390/ijerph15030561.
- Crego, A., Carrillo-Diaz, M., Armfield, J.M., & Romero, M. (2016). Stress academic performance in dental students: the role of coping strategies and examination-related self-efficacy. *Journal of Dental Education*, 8(2), 1665-172.
- De Jesus, S.N., Rus, C.L., Lens, W., & Imaginario, S. (2013). Self-determination theory in work organizations: The state of a science. *Annual Review of Organizational Psychological Organization*, 4, 19-43. DOI: 10.1146/annurev-jpsych-03256-113108.
- Deci, E.L., & Ryan, A.M. (2008). Facilitating optimal motivation and psychological well-being across life's domains. *Canadian Psychology*, 49(1), 14-23. DOI: 10.1037/0708-5591.49.1.14.
- Deci, E.L., Olafsen, A.H., & Ryan, R.M. (2017). Self-determination theory in work organizations: The state of a science. *Annual Review of Organizational Psychological Organization*, 4(1), 19-43. DOI: 10.1146/annurev-orpsych-03256-113108.

- Dogan, U. (2017). Student management, academic self-efficacy, and academic motivation as predictors of academic performance. *The Anthropologist*, 20(3), 553-561. DOI: 10.1080/09720073.2015.11891759.
- Dysvik, A., Kuvaas, B., & Gagne, M. (2013). An investigation of the unique, synergistic and balanced relationships between basic psychological needs and intrinsic motivation. *Journal of Applied Social Psychology*, 43(5), 1050-1064. DOI: 10.1111/jasp.12068.
- Fang, M., & Gerhart, B. (2012). Does pay for performance diminish intrinsic interest? *The International Journal of Human Resource Management*, 23, 1176-1196. DOI: 10.1080/09585192.2011.561227.
- Fischer, C., Malycha, C.P., & Schafmann, E. (2019). The influence of intrinsic motivation and synergistic extrinsic motivators on creativity and innovation. *Frontiers in Psychology*, 10, 37. DOI: 10.3389/fpsyg.2019.00137.
- Fried, Y., Shirom, A., Gilboa, S., & Cooper, C.L. (2008). The mediating effects of job satisfaction and propensity to leave on role stress – job performance relationships: Combining meta-analysis and structural equation modeling. *Internal Journal of Stress Management*, 15(4), 305-328. DOI: 10.1032/a0013932.
- Ganster, D.C., Kiersch, C.E., Marsh, R.E., & Bower, A. (2011). Performance-based rewards and work stress. *Journal of Organizational Behavior Management*, 31(4), 221-235. DOI: 10.1080/01608061.2011.619388.
- Gerhart, B., & Fang, M. (2014). Pay for (individual) performance: Issues, claims, evidence and the role of sorting effects. *Human Resource Management Review*, 24(1), 41-52. DOI: 10.1016/j.hrmr.2013.08.010.
- Gilboa, S., Shirom, A., Fried, Y., & Cooper, C. (2008). A meta-analysis of work demand stressors and job performance: Examining main and moderating effects. *Personnel Psychology*, 61(2), 227-271.
- Greenberg, J., & Barron, R.A. (2008). *Behavior in Organizations*, 9th edition. New Jersey: Pearson Education.
- Guay, F., Ratelle, C.F., & Chanal, J. (2008). Optimal learning in optimal contexts: The role of self-determination in education. *Canadian Psychology*, 49, 233-240. DOI: 10.1037/a0012758.
- Hair, J. E., Black, W. C., Babin, B. J., & Anderson, R. E. (2010). *Multivariate Data Analysis* (7th ed.). New Jersey: Prentice-Hall International Inc.
- Heinz, M. (2015). Why choose teaching? Exploratory student teachers' career motivations and levels of commitment in teaching. *Educational Research and Evaluation*, 21(3), 258-297.
- Henderson, R.K., Snyder, H.R., Gupta, T., & Banich, M.T. (2012). When does stress help or harm? The effects of stress controllability and subjective stress response on stroop performance. *Frontiers in Psychology*, 3 (Article 179), 1-15. DOI: 10.3389/fpsyg.2012.00179.
- Jamal, M. (2007). Job stress and job performance controversy revisited: An empirical examination in two countries. *International Journal of Stress Management*, 14(2), 175-187. DOI: 10.1037/1072-5245.14.2.175.
- Jamieson, J.P., Koslov, K.R., Nock, M.K., & Mendes, W.B. (2013). Experiences of discrimination increase risk taking. *Psychological Science*, 24(2), 131-139. DOI: 10.1177/0956797612448194.
- Jamieson, J.P., Peters, B.J., Greenwood, E.J., & Altose, A.J. (2016). Reappraising stress arousal improves performance and reduces evaluation anxiety in classroom exam situations. *Social Psychological and Personality Sciences*, 7, 579-587. DOI: 10.1177/1948550616644656.
- Jones, J., Turner, M., & Barker, J. (2020). The effects of a cognitive-behavioral stress intervention on the motivation and psychological well-being of senior UK police personnel. *International Journal of stress Management*, 28(1). DOI: 10.1037/str0000218.
- Koopmans, L., Bernaards, C., Hildebrandt, V., van Buuren, S., van der Beek, A.J., & de vet, H.C.W. (2013). Development of an individual work performance questionnaire. *International Journal of Productivity and Performance*, 62(1), 6-28. DOI: 10.1108/17410401311285273.
- Kori, K., Pedaste, M., Leijen, A., & Tonisson, E. (2016). The role of programming experience in ICT students' learning motivation and academic achievement. *International Journal of Information and Education Technology*, 6(5), 331-337. DOI: 10.7763/IJiet.2016.Vg.709.
- Korkmaz, A.C., & Ipekci, N.N. (2015). Motivation in nursing education: Intrinsic and extrinsic motivation resources of students. *Journal of Health and Nursing Teacher*, 33(12), 978-982.
- Kotter, T., Wagner, J., Bruheim, L., & Voltmer, E. (2017). Perceived medical school stress of undergraduate medical students predicts academic performance: an observational study. *BMC Medical Education*, 17, 256. DOI: 10.1186/s12909-017-1091-0.

- Kuvaas, B., Buch, R., Weibel, A., Dysvik, A., & Nerstad, C.G.L. (2017). Do intrinsic and extrinsic motivation relate differently to employee outcomes? *Journal of Economy Psychology*, 61(2017), 244-258. DOI: 10.1016/j.joep.2017.05.004.
- Kuvaas, B., Busch, R., Gagne, M., Dysvik, A. & Forest, J. (2016). Do you get what you pay for? Sales incentives and implications for motivation and changes in turnover intention work effort. *Motivation and Emotion*, 40(5), 667-680. DOI: 10.1007/s11031-016-9574-6.
- Lemos, M.S., & Verissimo, L. (2014). The relationships between intrinsic motivation, extrinsic motivation and achievement along elementary school. *Procedia-Social and Behavioral Science*, 112(2014), 930-938. DOI: 10.1016/j.sbspro.2014.01.1251.
- Lin, X.J., Zhang, C.Y., Yang, S., Hsu, M.L., Cheng, N, Chen, J., & Yu, H. (2020). Stress and its' association with academic performance among dental undergraduate students in Fijian, China: a cross-sectional online questionnaires survey. *BMC Medical Education*, 28: 18. DOI: 10.1186/s12909-020-02095-4.
- Liu, D., Jiang, K., Shalley, C.E., Keem, S., Zhou, J. (2016). Motivational mechanisms of employee creativity: A meta-analytic examination and theoretical extension of the creativity literature. *Organizational Behavior and human Decision Processes*, 137(2016), 236-263. DOI: 10.1016/j.obhdp.2016.08.001.
- Maier, S.F., & Watkins, L.R. (2010). Role of the medical preferential cortex in coping and resilience. *Brain Research*, 1355, 52-60. DOI: 10.1016/j.brainres.2010.08.039.
- Menges, J.I., Tussing, D.V., Wihler, A., & Grant, A.M. (2017). When job performance is all relative: How family motivation energizes effort and compensates for intrinsic motivation. *Academy of Management Journal*, 60(2), 695-719. DOI: 10.5465/amj.2014.0898.
- Muse, L.A., Harris, S.G., & Field, H.S. (2003). Has the inverted-U theory of stress and job performance ad a fair test? *Human Performance*, 16(4), 349-364.
- Olusegun, A.J., Oluwasayo, A.J., & Olawoyim, O. (2014). An overview of the effect of job stress on employees performance in Nigeria tertiary hospitals. *Ekonomika*, 60(4), 139-153.
- Park, J., Chung, S., An, H., Park, S., & Lee, C. (2012). A structural model of stress motivation and academic performance in medical students. *Psychiatry Investigation*, 9(2), 143-149. DOI: 10.4306/pi.2012.9.2.143.
- Patrick, H., & Williams, G.C. (2012). Self-determination theory: Its application to health behavior and complementarity with motivational interviewing. *Contemporary Journal of Behavioral Nutrition aand Physical Activity*, 9: 18. <http://www.ijbnpa.org/content/9/1/18>.
- Pinder, W.C.C. (2011). *Work Motivation in Organizational Behavior*, 2nd editiin. New York: Psychology Press.
- Podsakoff, P.M., McKenzie, S.B., & Podsakoff, N.P. (2012). Sources of method bias in social science research and recommendations on how to control it. *Annual Review of Psychology*, 63, 539-569. DOI: 10.1146/annurev-psych-126710-100542.
- Ranasinghe, P., Wathurapatha, W., Mathangasinghe, Y., & Ponnampuruma, G.G. (2017). Emotional intelligence, perceived stress and academic performance of Sri Lankan medical undergraduate. *BMC Medical Education*, 17: 41. DOI: 10.1186/s/2909-017-0884-5.
- Rodcliffe, C., & Lester, H. (2003). Perceived stress during undergraduate medical training: a Qualitative study. *Medical Education*, 37(1), 32-38.
- Ryan, R.M., & Deci, E.L. (2020). Intrinsic and extrinsic motivation from a self-determination theory perspective: Definitions, theory, practices, and future directions. *Contemporary Educational Psychology*, 61, Article 101860. DOI: 10.1016/j.cedpsych.2020.101860.
- Samaha, M., & Hawi, N.S. (2016). Relationships among smartphone addiction stress, academic performance, and satisfaction with life. *Computers in Human Behavior*, 57, 321-325. DOI: 10.1016/j.chb.2015.12.045.
- Shin, J., & Grant, A.M. (2019). Bored by interest: How intrinsic motivation in one fast can reduce performance on other tasks. *Academy of Management Journal*, 62(2), 415-436. DOI: 10.4565/amj.2017.0735.
- Taylor, G., Jungert, T., Mageau, G.A., Schattke, K., Dedic, H., Rosenfield, S., & Koestner, R. (2014). A self-determination theory approach to predicting school achievement overtime: The unique role of intrinsic motivation. *Contemporary Educational Psychology*, 39(3), 342-358. DOI: 10.1016/j.cedpsych.2014.08.002.
- Weerda, R., Mvehlhan, M., Wolf, O.T., & Thiel, C.M. (2010). Effects of acute psychological stress on working memory-related brain activity in men. *Human Brain Mapping*, 31(9), 1418-1429. DOI: 10.1002/hbm.20945.

-
- Weibel, A., Rost, K., & Osterloh, M. (2010). Pay for performance in the public sector-benefits and (hidden) costs. *Journal of Public Administration Research and Theory*, 20(2), 387-412. DOI: 10.1093/jopart/mup009.
- Wu, X., Li, Y., Yao, Y., Luo, X., He, X., & Yin, W. (2018). Development of construction workers job stress scale to study and the relationship between job stress and safety behavior: An empirical study in Beijing. *International Journal of Environmental Research and Public Health*, 15, 2409, 1-12. DOI: 10.3390/ijerph15112409.
- Yozgat, U., Yurtkoru, S., & Bilginoglu, E. (2013). Job stress and job performance among employees in public sector in Istanbul: Examining the moderating role of emotional intelligence. *Procedia-Social and Behavioral Sciences*, 75(2013), 518-524. DOI: 10.1016/j.sbspro.2013.04.056.