

UNDERSTANDING THE INTERPLAY BETWEEN WORK STRESS, STRESS BELIEFS, STRESS RESPONSE, AND JOB PERFORMANCE AMONG ELECTRONIC TECHNOLOGY TEACHERS

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ABSTRACT

Teachers of electronic technology are essential in helping TVET graduates develop the skills they need to be independent and find rewarding work. However, the nature of their job makes them prone to work stress, potentially impacting their job performance. Drawing on previous research, this study examines how electronic technology teachers' stress beliefs and stress responses can explain or alter the association between stress encountered at work and job performance. The study involved 123 electronic technology teachers and 22 heads of departments in government-owned universities in Nigeria. The data collected through surveys were analysed using bivariate correlation analysis. The findings revealed that higher levels of work stress were associated with lower job performance and negative stress responses.

Conversely, positive stress beliefs and positive stress responses were linked to higher job performance. The study highlights the importance of managing work stress, cultivating positive stress beliefs, and promoting adaptive stress responses to enhance job performance among electronic technology teachers. The results suggest interventions and support systems that address work stressors foster positive stress beliefs and facilitate effective stress management strategies to create a conducive work environment and optimise performance among electronic technology teachers.

Keywords: Electronic technology teachers, Job performance, Stress beliefs, Stress response, Work stress

INTRODUCTION

Electronic technology teachers impart knowledge and skills related to electronic technology and its applications. They are essential in promoting learners' skill acquisition for profitable employment. According to Watford UTC (2015), an elec-

tronic technology teacher nurtures skill acquisition in students and other teaching job demands. Additionally, electronic technology teachers support skill acquisition in learners through high-quality lesson preparation and delivery (Richmond, 2017). Electronic technology teachers in Nigeria are daily challenged by heavy teaching responsibilities, administrative duties, and countless problems from students, assignments and examinations, script marking, salary deductions, delayed salary, delayed promotion, and, for some, the pursuit of higher education. Generally, electronic technology teachers' working conditions in Nigeria make them more prone to work stress. Work stress and other adverse reactions occur when workplace demands are incompatible with an employee's resources (National Institute of Occupational Safety and Health, 1999).

Moreover, studies have shown that teachers undergo much stress (Kyriacou, 2001; Denobile & McCormick, 2005; Geving, 2007). In addition, Ekpenyong and Inyang (2014) and Olaitan, Oyerinde, Obiyemi and Kayode (2010) reported the prevalence of work-related stress among teachers in Nigeria. This prevalent workplace stress can have an impact on their job performance.

Job performance refers to the effectiveness and efficiency with which an individual performs their job-related tasks, duties, and responsibilities within an organization. Rahim and Omar (2017) defined job performance as the extent to which one completes assigned duties. Dimensions of job performance include task performance, contextual performance and adaptive performance (Koopmans et al., 2012). Studies have suggested an inverse relationship between work stress and job performance. Among them is the Job Demands-Resource [JD-R] theory (Bakker & Demerouti, 2014), which suggests that electronic technology teachers stress-inducing job demands are an important predictor of low job performance. Cartwright and Cooper (1997) also highlighted the detrimental effects of work stress on job performance. The stress-inducing nature of electronic technology teachers' jobs implies that their job performance may be low.

The relationship between the amount of stress a teacher experiences and his/her job performance has also been explained indirectly through the teacher's behavioural responses and other actions. According to Everly and Lating (2013), how a person reacts to stress is a link between any particular stressor and dysfunction, such as decrement in job performance. Stress response can also be seen as what happens when an individual reacts to stressors (Payne, 2005). Prentice (2000) classified different ways to respond to stress as emotional, behavioural, cognitive, and physiological.

Emotional response refers to thoughts and feelings such as fear, excitement, and frustration an individual generates in response to stress (Crum & Lyddy, 2013, and

Herrald & Tomaka, 2002). Additionally, behavioural response depicts actions, such as arguing and avoiding, that an individual is taking or not taking in response to the stress. On the other hand, a physiological response describes the bodily reactions that occur in response to stress (such as trouble sleeping, a racing heart, and exhaustion). Lastly, cognitive stress response depicts factors like initiative taking and poor concentration that influence cognitive performance under stressful situations (Bar-Haim et al., 2007; Kassam et al., 2009; Blascovich & Mendes, 2010). Due to the described mediating role of an individual's stress response in the relationship between work stress and job performance (Everly & Lating, 2013), it is anticipated that a teacher of electronic technology may demonstrate decreased job performance as a result of his/her negative response to stress, and vice versa.

Furthermore, it has been documented that not everyone responds to stress negatively (Bernard, 2016; Laferton et al., 2016). While some individuals take advantage of stressful situations to motivate performance (Boyd, 2017; Lambert, 2005), others can exhibit depression, aggression, relational conflict, and other health conditions such as high blood pressure and mental health issues (ILO, 2015; Jamieson et al., 2013; Chrousos, 2009; Hameen, 2005; Avallone & Paplomatas, 2005). Reasons why certain individuals respond positively, whereas some negatively, even when they are all confronted with the same stressor, are worth investigating. In line with this, Kilby and Sherman (2016) suggested that this may result from individual stress beliefs. According to Crum, Salovey, and Achor (2013), stress beliefs are a collection of beliefs an individual holds about the positive and negative side of the stress experience, whereby an individual can either hold stress-is-debilitating or stress-is-enhancing beliefs (Crum & Lyddy, 2013). However, according to Crum, Leibowitz, and Verghese (2017), the degree to which stress produces beneficial or harmful effects is related to whether the individual believes stress is generally an enhancing or debilitating experience.

Based on the previous, positive stress belief of electronic technology teachers is expected to lead to positive physiological, emotional, behavioural, and cognitive responses when engaging stressors, thereby aiding the teachers in meeting professional standards of job performance. Gaining more insights into the relationship between work stress, stress beliefs, stress response, and job performance among electronic technology teachers can provide valuable information on strategies that can be used to promote well-being and enhance the performance of electronic technology teachers. In carrying out this study, the following research questions were raised:

What is the relationship between work stress and job performance of electronic technology teachers?

What is the relationship between work stress and stress response of electronic technology teachers?

What is the relationship between stress belief and job performance of electronic technology teachers?

What is the relationship between stress belief and stress response of electronic technology teachers?

What is the relationship between stress response and job performance of electronic technology teachers?

METHOD

Participants:

This survey included 123 electronic technology teachers and 22 department heads from Nigeria's 22 government-owned universities that offer electronic technology education.

Measures:

Profile of respondents: Description of respondents based on gender, stress beliefs, work stress, and job performance indicated that more male respondents were involved in the study (93%). Majority of the electronic technology teachers are facing a high amount of work stress (54%), and about half of the teachers are not exhibiting professional standards of job performance (51%). Also, negative stress beliefs are common among the teachers (80%).

Work stress: This is a 20-item scale based on the following measures: The 4-item 'Assessment of Teacher Stress Questionnaire' (Kyriacou, 2001), the 45-item 'Intensity of Stressful Events-at-Work Questionnaire' (Motowidlo et al., 1986), the 10-item 'Perceived Stress Scale' (Cohen et al., 1983), the 5-item 'Job Stress Scale' (Lambert et al., 2006) and 22-item 'Workplace Stressor Assessment Questionnaire' (Mahmood et al., 2010). The work stress scale measured how stressful electronic technology teachers perceive their working conditions to be. Participants estimated the level of stress in their work environments on a scale of 1 (Extremely stressful) to 5 (Not at all stressful), with lower scores indicating greater work stress.

Stress response: The stress response of electronic technology teachers was assessed using a 43-item scale that is divided into four clusters, measuring, respectively, physiological response to stress (11 items), cognitive response to stress (10 items), emotional response to stress (10 items), and behavioral response to stress (12 items). The 40-item "Stress Response Inventory" (Prentice, 2000) served as the basis for the scale. On a 5-point scale with a range from 1 (Never) to 5 (Very often), teachers of electronic technology described their typical reaction to stressful situations. A mean score of 3.50 or above implies a negative stress response.

Stress beliefs: This 23-item measure is based on the “Stress Beliefs Scale” (Laferton et al., 2016). Participants were asked to report their opinions on stress on a 5-point scale, ranging from 1 (strongly disagree) to 5 (strongly agree). Higher scores indicated positive stress beliefs, whereas lower scores indicated negative stress beliefs.

Job performance: An average of both supervisor/peer and teacher self-ratings was used to assess the work performance of the electronic technology teacher. A 37-item scale that was developed from the 47-item “Individual Work Performance Questionnaire” was utilised as self-report surveys of teachers’ work performance over the preceding three months (Koopmans et al., 2012). Each item has a 5-point rating system. Following is how the rating scale labels were modified for the particular items: Items 1 and 2 was rated from (insufficient) to (very good), items 3 and 4 was rated from (much worse) to (much better), items 5 and 6 was rated from (not at all) to (a great deal), while items 7-37 was rated from (seldom) to (always). The wordings of the teacher self-report measures were adjusted for use as the supervisor-rating instrument to measure teacher performance over the previous three months. Only the heads of departments received the scale that supervisors used to evaluate the work of electronic technology teachers. A high score implies a high job performance for both the self-report and supervisor ratings of job performance.

DATA ANALYSIS

Data analysis techniques included frequency counts, percentages, means, standard deviations, and correlational analyses. Frequency counts, percentages, means, standard deviations, and bivariate correlations were all performed using the Statistical Package for Social Sciences (SPSS) 22.0. The strength of correlation coefficients (r), which ranged from 0.00 to 0.19 for very weak relationships; 0.20 to 0.39 for weak relationships; 0.40 to 0.59 for moderate relationships; 0.60 to 0.79 for strong relationships; and 0.80 to 1.00 for very strong relationships, served as the decision rule for establishing correlation analyses (Evans, 1996).

RESULTS

Research Question 1

What is the relationship between work stress and job performance of electronic technology teachers?

Table 1: Bivariate correlation of work stress and job performance

Variables	M	SD	1	2	3	4	5
1. Work stress	3.01	0.91	1				
2. Task performance	3.64	1.00	.599**	1			
3. Contextual Performance	3.50	1.02	.500**	.988**	1		
4. Adaptive Performance	3.71	1.19	.558**	.909**	.906**	1	
5. Overall Job Performance	3.63	1.06	.596**	.981**	.979**	.970**	1

Electronic technology teachers were surveyed about their level of work stress ($M = 3.01$, $SD = 0.91$) and job performance ($M = 3.63$, $SD = 1.06$). A bivariate correlation analysis presented in Table 1 revealed a moderate positive correlation, $r = .596$. This means that, in general, electronic technology teachers who reported a large amount of stress at work tend to experience low job performance. The effect size of r is also considered moderate for all the dimensions of job performance, $r = .599$ (task performance), $.500$ (contextual performance), and $.588$ (adaptive performance).

Research Question 2

What is the relationship between work stress and stress response of electronic technology teachers?

Table 2: Bivariate correlation of work stress and stress response

Variables	M	SD	1	2	3	4	5	6
1. Work Stress	3.01	0.91	1					
2. Physiological Stress Response	2.39	1.16	.604**	1				
3. Cognitive Stress Response	3.29	0.67	.009	.105	1			
4. Emotional Stress Response	3.62	0.31	.535**	.884**	.049	1		
5. Behavioural Stress Response	3.31	0.84	.434**	.632**	.034	.505**	1	
6. Overall Stress Response	3.16	0.66	.599**	.963**	.073	.882**	.795**	1

To investigate the relationship between work stress ($M = 3.01$, $SD = 0.91$) and stress response ($M = 3.16$, $SD = 0.66$) of electronic technology teachers, a bivariate correlation was computed. As shown in Table 2, the direction of the correlation was positive, $r = .599$. This means that, in general, teachers who experience a large amount of stress at work tends to show negative stress response with conditions such as aggression, relational conflict, while on the other hand, teachers who experience a low amount of stress tend to have a more positive response to stress. The effect size of r is considered moderate for the overall stress response, while it ranges from very weak to strong for the dimensions of stress response, $r = .009$ (cognitive stress response), $.434$

(behavioural stress response), .535 (emotional stress response), and .604 (physiological stress response).

Research Question 3

What is the relationship between stress belief and job performance of electronic technology teachers?

Table 3: Bivariate correlation of stress beliefs and job performance

Variables	M	SD	1	2	3	4	5
1. Stress beliefs	3.19	0.99	1				
2. Task performance	3.64	1.00	.544**	1			
3. Contextual performance	3.50	1.02	.547**	.988**	1		
4. Adaptive performance	3.71	1.19	.659**	.909**	.906**	1	
5. Job performance	3.63	1.06	.609**	.981**	.979**	.970**	1

Electronic technology teachers were surveyed about their stress beliefs ($M = 3.19, SD = 0.99$) and job performance ($M = 3.63, SD = 1.06$). A bivariate correlation analysis presented in Table 3 revealed a strong positive correlation, $r = .609$. The positive correlation means that, in general, electronic technology teachers who hold positive stress beliefs recorded high job performance. The effect size of r is considered moderate for task performance [$r = .544$], contextual performance [.547], and strong for adaptive performance [.659].

Research Question 4

What is the relationship between stress belief and stress response of electronic technology teachers?

Table 4: Bivariate correlation of stress beliefs and stress response

Variables	M	SD	1	2	3	4	5	6
1. Stress beliefs	3.19	0.99	1					
2. Physiological Stress Response	2.39	1.16	.726**	1				
3. Cognitive Stress Response	3.29	0.67w	.196*	.105	1			
4. Emotional Stress Response	3.62	0.31	.715**	.884**	.049	1		
5. Behavioural Stress Response	3.31	0.84	.288**	.632**	.034	.505**	1	
6. Overall Stress Response	3.16	0.66	.669**	.963**	.073	.882**	.795**	1

To investigate the relationship between stress beliefs ($M = 3.19, SD = 0.99$) and stress response ($M = 3.16, SD = 0.66$) of Electronic technology teachers, a bivariate correlation was computed. As shown in Table 4, the direction of the correlation was positive, $r = .669$. This means that, in general, teachers who hold positive stress beliefs recorded positive response to stress. The effect size of r is considered strong for the overall stress response, while it ranges from weak to strong for the dimensions of stress response, $r = .196$ (cognitive stress response), $.288$ (behavioural stress response), $.715$ (emotional stress response), and $.726$ (physiological stress response).

Research Question 5

What is the relationship between stress response and job performance of electronic technology teachers?

Table 5: Bivariate correlation of stress response and job performance

Variables	M	SD	1	2	3	4	5	6	7	8	9
1. Physiological Response	2.39	1.16	1								
2. Cognitive Response	3.29	0.67	.105	1							
3. Emotional Response	3.62	0.31	.884**	.049	1						
4. Behavioural Response	3.31	0.84	.632**	.034	.505**	1					
5. Overall Stress Response	3.16	0.66	.963**	.073	.882**	.795**	1				
6. Task performance	3.64	1.00	.726**	.031	.687**	.416**	.698**	1			
7. Contextual performance	3.50	1.02	.723**	.034	.683**	.427**	.697**	.988**	1		
8. Adaptive performance	3.71	1.19	.866**	.054	.803**	.534**	.839**	.909**	.906**	1	
9. Job performance	3.63	1.06	.804**	.005	.753**	.481**	.777**	.981**	.979**	.970**	1

Electronic technology teachers were surveyed about their stress response ($M = 3.16, SD = 0.66$) and job performance ($M = 3.63, SD = 1.06$). A bivariate correlation analysis presented in Table 5 revealed a strong positive correlation, $r = .777$. The positive correlation means that, in general, electronic technology teachers who responded positively to stress recorded high job performance. The intercorrelations between the various dimensions of stress response and job performance are all positive, and it ranges from weak to strong relationship.

DISCUSSION

The study investigated the relationships between work stress, stress beliefs, stress response, and job performance of electronic technology teachers. The bivariate correlation analysis (Table 1) revealed a moderate positive correlation ($r = 0.596$) between work stress and overall job performance. This indicates that electronic technology teachers who reported higher work stress tended to have lower job performance. Similar moderate positive correlations were found for the dimensions of job performance, including task performance ($r = 0.599$), contextual performance ($r = 0.500$), and adaptive performance ($r = 0.588$). This finding validates the job demand resource theory, which suggests an inverse relationship between work stress and job performance. The finding also agrees with Atkinson (2004) and Mohammadi and Keshavarz (2011), who have linked work stress to decrements in job performance.

Also, the bivariate correlation analysis in Table 2 showed a positive correlation ($r = 0.599$) between work stress and overall stress response. This means that teachers experiencing higher work stress tended to exhibit negative stress responses, such as aggression and relational conflict. On the other hand, lower levels of work stress were associated with more positive responses to stress. The correlation coefficients varied from very weak to strong for the dimensions of stress response, including physiological stress response ($r = 0.604$), cognitive stress response ($r = 0.009$), emotional stress response ($r = 0.535$), and behavioural stress response ($r = 0.434$). These findings are supported by numerous studies that have linked stress to deleterious conditions, including common cold, sadness, anxiety, confusion, misjudgement, irritability, indecisiveness, absenteeism, relational conflict, digestive disorders, reduced resistance to infections, and heart attack [Stranks, 2005; HSE, 2002; Hameen, 2005; Wang, 2005; Sapolsky, 1996].

Furthermore, the bivariate correlation analysis in Table 3 revealed a strong positive correlation ($r = 0.609$) between stress beliefs and job performance. This indicates that electronic technology teachers who held positive stress beliefs tended to have higher levels of job performance. The effect sizes were moderate for task performance ($r = 0.544$), contextual performance ($r = 0.547$), and strong for adaptive performance ($r = 0.659$). This finding is in agreement with that of Arosen, Fried, and Good (2002) and Blackwell et al. (2007), who noted that mindsets could significantly influence health and performance.

The bivariate correlation analysis in Table 4 also showed a positive correlation ($r = 0.669$) between stress beliefs and overall stress response. This suggests that teachers with positive stress beliefs tended to exhibit more positive responses to stress. The effect sizes ranged from weak to strong for the dimensions of stress response,

including cognitive stress response ($r = 0.196$), behavioural stress response ($r = 0.288$), emotional stress response ($r = 0.715$), and physiological stress response ($r = 0.726$). In line with the findings, Guglielmi et al. (2019) noted that positive beliefs have a positive relationship with good characteristics that help people resolve life challenges. The findings also confirm the tenets of the stress mindset theory (Crum et al., 2017), which suggests that positive stress beliefs lead to a positive rather than negative stress response.

The bivariate correlation analysis (Table 5) revealed a strong positive correlation ($r = 0.777$) between stress response and job performance. This means that electronic technology teachers who responded positively to stress tended to have higher levels of job performance. The intercorrelations between the various dimensions of stress response and job performance were positive, ranging from weak to strong. In support of this finding, Everly and Lating (2003) noted that an individual manner of stress response serves as a mechanism linking any given stressor to disease and dysfunction, such as decrement in job performance. Furthermore, the positive stress response of Electronic technology teachers can boost motivation and initiative-taking to acquire the necessary skills and self-efficacy needed to meet pressing demands (Fay & Sonnetag, 2002), which aids improvement in job performance.

In summary, the study's findings suggest that work stress, stress beliefs, and stress response are significantly related to job performance among electronic technology teachers. Higher levels of work stress were associated with lower job performance and negative stress responses. Conversely, positive stress beliefs and positive stress responses were linked to higher job performance. These results highlight the importance of managing work stress and cultivating positive beliefs and responses to stress to enhance job performance among electronic technology teachers.

CONCLUSION

The study found that individuals experiencing higher levels of work stress tended to exhibit lower levels of job performance. This aligns with previous research highlighting the detrimental effects of work stress on performance across various professions (Cartwright & Cooper, 1997). The findings emphasize the importance of addressing work stressors to foster a conducive work environment and optimize job performance among electronic technology teachers. Also, teachers who held positive stress beliefs exhibited higher levels of job performance. This implies that positive stress beliefs can be a psychological resource, empowering individuals to manage work stress and enhance their performance.

Furthermore, higher levels of work stress were associated with negative stress responses, including aggression and relational conflict. Conversely, lower levels of work stress correlated with more positive responses to stress. These findings underscore the need for organizations to implement measures that mitigate work stress and promote adaptive stress response strategies, such as stress reduction programs and fostering a supportive work environment (Kompier et al., 2000). The study also revealed that individuals with positive stress beliefs responded more positively. In addition, those who responded positively to stress exhibited higher levels of job performance. This implies that individuals with effective stress response mechanisms are better equipped to manage the demands of their profession and perform at optimal levels.

The study's findings shed light on the relationship between work stress, stress beliefs, stress response, and job performance among electronic technology teachers. The results emphasize recognizing and addressing work stressors while nurturing positive stress beliefs and promoting adaptive stress response strategies.

RECOMMENDATIONS

Based on the findings of this study, the following are recommended:

Electronic technology teachers should be provided with opportunities for professional development, state-of-the-art equipment, resources for coping with stress, and other measures to support and create an enabling work environment.

Teachers should be exposed to intervention programmes that promote positive stress beliefs, such as stress management training and cognitive-behavioural techniques.

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