

Coping Strategies Adopted by Construction Employees to Deal with the Causes and Effects of Occupational Psychological Disorders: A Study in Ghana

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Abstract

Coping strategies adopted to deal with psychological health issues could have influences on the general health, productivity and task performance of the employee. This study sought to investigate the coping strategies adopted by construction employees to deal with the causes and effects of occupational psychological disorders such as burnout and workaholism. To achieve this aim, the methods of focus group discussions were first employed. A total of 16 semi-structured focus group discussions were held in Ghana, with 90 construction employees. The focus group study revealed 25 coping strategies adopted as efforts to mitigate the causes and 22 coping strategies adopted as responses to moderate the effects of occupational psychological disorders. A quantitative study involving 150 construction professionals and 150 construction trade workers were also conducted in Ghana to investigate the coping strategies that were highly adopted by the two construction working groups. The findings from the study revealed that the construction professionals adopted delegating complicated tasks and seeking medical attention as the most common coping strategies to manage the causes and effects respectively. The construction trade workers were also revealed to adopt withdrawing from work duties or changing jobs and taking in more caffeinated drinks as the most common coping strategies to manage the causes and effects respectively. Exploratory factor analysis was employed, and the findings were put into the main constructs. The causes focused coping strategies were categorized under avoidance, alteration, adaptation, and acceptance. The effects focused coping strategies were also categorized under healthy and unhealthy coping strategies. This study recommends appropriate coping strategies and

interventions in the construction industry such as education of construction personnel on the consequences of various coping strategies.

Keywords

Occupational Psychology, Psychological Disorders, Coping Strategies, Construction Employees, Ghana

1. Introduction

Previous studies have shown that construction personnel could be exposed to various forms of psychological health risk factors, which lead to various psychological health conditions such as burnout, workaholism, stress, anxiety or depression [1] [2]. For instance, the demanding, uncertain and dynamic nature of the construction industry could expose construction employees to occupational psychological disorders [3] [4]. Psychological disorders or health conditions of construction personnel usually emanate from construction work-related factors, personality characterizes, and individual lifestyles [5] [6]. Both construction professionals and construction trade workers contribute significantly in their unique way to the outcomes of every construction project, in terms of cost, time and quality [1] [7]. Psychological health conditions of construction employees could lead to poor task performance [8], low productivity [9], high turnover [10], high absenteeism [11], high work-place accidents [12], increased physical health problems [7], and poor working relationships [13] at the construction industry.

The causes and effects of psychological disorders lead to the triggering of various coping strategies by individuals [14] [15]. Coping strategies involve cognitive and behavioral efforts or responses to modify the causes and moderate the effects of psychological disorders [16] [17]. Individuals may exhibit different coping strategies, even though they are exposed to similar triggers of psychological disorders [18] [19]. Employees' individual vulnerabilities, level of strength and coping strategies are significant factors in the experience of psychological disorders [19]. The factors leading to psychological disorders account for only one-third of the experience, the other two-third results from inappropriate coping strategies adopted as reactions to the psychological risk factors [15]. Experience of psychological disorders is thus dependent on the individual's subjective judgment and reflects individuals' capability to cope with external demands, which are often inevitable [20]. Several factors account directly or indirectly to the selection of coping strategies, such as perceived cause, symptom, past experiences and individual personality [17]. Coping strategies adopted by construction personnel could have immediate or long-term consequences on the individual and the organization [2] [20].

This study forms part of a research project that aims to develop an occupational psychological health management model for construction employees. The

complexity of the management of employee's psychological health necessitates an understanding of how the individual employees behave [8] [21]. The acquisition of such information will facilitate improvement in the management of construction workers psychological health [2]. This has led to the following research questions for this study: what are the coping strategies adopted as efforts to mitigate the causes of psychological disorders such as high task demands, poor working conditions, abusive and overdemanding supervisors and the likes? And what are the coping strategies adopted as their responses to moderate the effects of psychological disorders such as headache, fatigue, chronic pains, insomnia, and the likes?

2. Background of Research

Coping strategies emanate from individuals as their psychophysical responses or reactions to the triggers of psychological ill-being [19]. Appropriate coping strategies adopted could help alleviate the effects of psychological disorders [22], and enhance employees work performance [23]. However, ineffective coping strategies could aggravate the effects of psychological disorders, with negative influences on the health, interpersonal relationships and the task performance of the construction personnel [24]. A study conducted on aircraft maintenance personnel by Lin, [25] advocated that, the personnel who adopted appropriate control and supportive coping strategies reported low levels of occupational psychological disorders such as stress and work injuries.

The experience of various levels of psychological disorders among construction personnel could predict the adoption of ineffective and maladaptive coping strategies [12]. A study conducted on Nurses by Akangbe and Tetteh, [14] also advocated that employees with more experience and a higher level of professional skills are more willing and likely to adopt healthy and appropriate coping strategies. Individual's cognition of the influences of their coping strategies on their health, task performances and the construction industry's outcomes, will lead to the adoption of appropriate coping strategies [1].

Theoretical Concepts of Coping Strategies

Coping strategies are the major components to the process of experiencing psychological disorders, such as stress [26]. Coping strategies involve behavioral and cognitive efforts of individuals to manage specific internal or external demands that are perceived as exceeding the individual's capabilities or resources [27]. In other words, individual coping strategies are process-oriented behaviors, which involve mastering, tolerance or reduction, as efforts to manage demands that exceed or conflicts with a person's resources or capabilities [28].

Coping strategies involves personality style or trait, psychoanalytic approaches (involving realistic thinking and actions for successful adjustment), sequential stages of discrete responses and specific approaches to specific problems or events [29] [30]. Appropriate coping mechanisms focus on personality character-

ristics, successful adjustments, sequential stages or specific events [20]. Coping strategies can also be determined by the quality and amount of resources available when the specific problem arose [31]. Individuals usually focus on either the problem encountered, or the emotions experienced, which results in different coping behaviors and cognitive efforts [14] [32].

The literature search revealed several sub-dimensions of the problems or causes focused and effects or emotions focused coping strategies. The coping strategies are usually limited to the causes or problems faced, but appropriate coping strategies should incorporate both effects-focused and causes-focused efforts [33]. Effective coping strategies should therefore not only resolve the problems faced but mitigate the negative consequences and impacts of psychological disorders [34] [35].

Causes-focused coping strategies

Causes-focused strategies are the cognitive strategies that individuals adopt to ensure their well-being, by modifying the sources of psychological disorders such as environmental conditions [24]. The causes-focused coping strategies include planful problem-solving, confrontive coping, instrumental support seeking and positive reappraisal [36]. Coping strategies that focus on addressing the problem or the cause depicts an individuals' rationality and their thought processes [28]. Causes-focused coping strategies are usually influenced by the dimensions of intensity, predictability, controllability, adaptability, and mastery of the psychological health factor, which might increase the risk of maladaptive coping strategies such as drug addiction [27] [37].

Effects-focused coping strategies

Effects-focused coping strategies aim at managing the consequences of psychological disorders through various coping strategies [38]. The effects-focused coping strategies for psychological disorders are the efforts of individuals to adjust their psychological health state while moderating their levels of emotional arousal [22] [25]. Responses to emotions such as anger, fear, and guilt are examples of effects-focused coping strategies [39]. There are several sub-dimensions of coping strategies relating to one's emotions. These are emotional discharge, escapism or avoidance, acceptance of responsibility, distancing, social support-seeking and self-control or adjustment [36] [40].

3. Research Methodology

The research sorts to explore the coping strategies of construction personnel in dealing with the causes and effects of psychological disorders. To achieve this research objective, focus group discussions were held which were then followed by a quantitative study. The primary data collected using a qualitative research approach was intended to provide some unique findings, which have not yet been revealed by previous researchers. The results from the qualitative data were used to develop the questionnaire for the quantitative study. A total of 16 semi-structured focus group discussions were held in Ghana, with 90 construc-

tion employees. A quantitative study involving 150 construction professionals and 150 construction trade workers were also conducted in Ghana to investigate the coping strategies that were highly adopted by the two construction working groups.

A non-probability sampling technique, precisely the purposive sampling method was adopted in selecting the research participants for both the qualitative and quantitative study. This sampling technique was more preferred since the population was undefined and indefinite. A non-probability method of sampling is also fast in its approach and has a relatively cheap cost associated with the method of data gathering [41]. The participants in the study were selected on the basis that 1) they have some work experiences in a Ghanaian construction company and 2) they belong to either a construction professionals' group or a construction working trade. The research participants were selected mostly from 32 construction companies in Ghana. The construction professionals comprised of architects, engineers, quantity surveyors, contractors, supervisors, construction managers, and project managers. The construction trade working group included: carpenters, masons, plumbers, steel benders and others.

3.1. Ethical Considerations

Every research requires that the researcher gives attention to appropriate research ethics and this study is not an exemption. Voluntarily, respondents were allowed to participate in the study based on their free will. Consent forms were also used to assure the participants of the confidentiality of their responses. The prospective respondents were assured that the study result would not place any respondents at risk of criminal or civil liability nor damage respondents' financial standing, employability or reputation. Anonymity and personal information of the participants were treated with confidentiality.

The background information of the research participants has been shown in **Table 1** for the construction professionals' group and **Table 2** for the construction trade workers group.

3.2. Questionnaire Design

The sixteen (16) focus group discussion generated a huge data. The participants revealed 25 causes-focused coping strategies and 22 effects-focused coping strategies, which were then used to design the questionnaire for the survey study. This research sought to determine the highly adopted coping strategies revealed from the focus group study. The questionnaire consisted of closed-ended questions which focused on the subject matter and aimed to cover the objective of the research. The respondents were requested to indicate the level of likelihood of adopting the coping strategies presented in the questionnaire, using a 5-point Likert scale with the following qualifications: "Most likely" rated as 5 points, "Likely" rated as 4 points, "Neutral" rated as 3 points, "Unlikely" rated as 2 points, and "Most unlikely" rated as 1 point. The questionnaire submitted to the research participants has been provided as supplementary material.

Table 1. Background information of construction professionals group participants.

Information	Categories	Frequency	Percentage
		(150 Participants)	
Age	25 - 35	40	27
	36 - 45	60	40
	46 - 55	30	20
	>55	20	13
Work Trade	Architect	23	16
	Contractor	23	16
	Engineer	43	29
	Quantity Surveyor	27	18
	Supervisor	20	12
	Construction Manager	10	7
	Project Manager	3	2
Years of Working Experience	Less than 1 Year	10	7
	1 - 5 yrs	63	42
	6 - 10 yrs	47	31
	Above 10 yrs	30	20
Level of Education	GCE "A" Level	3	2
	GCE "O" Level	0	0
	Junior High School Level	3	2
	Secondary School Level	7	4
	Technical or Vocational Level	60	40
Marital Status	Tertiary Level or Above	77	51
	Married	120	80
Gender	Single	30	20
	Male	130	87
	Female	20	13

Table 2. Background information of construction trade workers group participants.

Information	Categories	Frequency	Percentage
		(150 Participants)	
Age	25 - 35	30	20
	36 - 45	60	40
	46 - 55	43	29
	>55	17	11
Work Trade	Carpenter	40	27
	Concreteer	47	31

Continued

	Plumber	17	11
	Welder	3	2
	Steel Bender	13	9
	Plasterer	10	7
	Painter	7	4
	Electrician	7	4
	Plant and Equipment Operator	3	2
	Plant and Equipment Mechanic	3	2
Years of Working Experience	Less than 1 year	7	4
	1 - 5 yrs	37	24
	6 - 10 yrs	90	60
	Above 10 yrs	17	11
Level of Education	GCE "A" Level	7	4
	GCE "O" Level	3	2
	Junior High School Level	57	38
	Secondary School Level	13	9
	Technical or Vocational Level	60	40
	Tertiary Level or Above	10	7
Marital Status	Married	107	71
	Single	43	29
Gender	Male	143	96
	Female	7	4

3.3. The Hypotheses for the Study

Some statements were systematically created and tested to establish whether there is a relationship between two or more variables and to establish whether the hypothesis tested should be rejected or not rejected.

For this study the hypotheses tested were:

- 1) Assume there is no statistically significant factor measured as coping strategies.
- 2) Assume there is no statistically significant difference between the mean scores obtained from construction professionals "a" and construction trade workers "b" for all variables measured.

The alternative hypothesis is the hypothesis to be considered after the null hypothesis tested has failed the test and is to be rejected [42]. The alternative hypotheses for this study are as follows:

- 1) Assume there is/are a statistically significant factor(s) measured as construction work-related psychological risk factor(s).
- 2) Assume there is a statistically significant difference between the mean scores

obtained from the construction professionals' group "a" and construction trade workers' group "b".

The value of the test statistics was 0.05.

If the p-value ≤ 0.05 , this means the difference in the mean scores is statistically significant, and hence the null hypothesis will be rejected, and the alternative hypothesis considered.

If the p-value ≥ 0.05 , this means the difference in the mean scores is not statistically significant, and hence the null hypothesis will not be rejected.

4. Data Analysis

The quantitative data collected were organized and coded and subjected to analysis using the Statistical Package for Social Scientists, version 19. Descriptive statistics of mean and standard deviation were used to describe the frequency distribution of the data collected. Inferential statistics of one sample T-test was used to measure the level of significance of the coping strategies as determined by all the respondents.

Exploratory factor analysis was done to group the variables into constructs that have the same phenomena [43]. To determine whether the data were suitable for factor analysis, Kaiser-Meyer-Olkin (KMO) measure of sampling was utilized. Bartlett's test of sphericity was used to determine the multivariate normality of the variables measured. Principal component analysis method and varimax rotation method was utilized for the extraction analysis. The total number of constructs extracted should be based on Eigenvalues greater than 1 and factor loadings of the variables should be greater than 0.50 [41] [42]. Cronbach's alpha was also used to test the reliability and internal consistency of the variables grouped under a construct. The alpha value ranges from zero to one. Reliability or internal consistency is considered unacceptable unless is 0.7 or above [42].

Blom's fractional rank estimation method was used to assess whether the data obtained from the two construction working groups were normally distributed for all variables [42] [43]. Independent two-sample T-test was used to assess whether the means of the construction professionals' group statistically differed from the means of the construction trade workers group. This form of analysis was appropriate for comparing the means of two groups from which the samples are normally distributed [41]. Levene's Test for equality of variances was adopted for the independent two-sample test.

To determine the ranks of the various coping strategies adopted by each construction working group, relative importance index (RII) was calculated using the method recommended by Enshassi, *et al.* [43].

The RII formula is as follows:

$$RII = \frac{w}{H \times N_{\%100}}$$

where:

w = the weighting given by the respondents from the scale of 1 to 5.

$H = 5$, the highest of the weighting.

N = total number of respondents in each construction working group (150 each).

5. Results and Discussion

It is recommended that the Kaiser-Meyer-Olkin (KMO) value should be greater than 0.50 [43]. The Chi-Square value using Bartlett's Test of Sphericity should also have a significant value of 0.05 or less [41]. The results of the measure of sampling adequacy using Kaiser-Meyer-Olkin (KMO) was 0.912, and the results of sphericity using Bartlett's test was 0.000 for significance at approximate Chi-Square value of 2.114E4. These test results confirm that factor analysis was appropriate for the analyses of the data and depicted that the results of the data can be relied upon. Exploratory factor analysis revealed that 6 constructs existed among all the variables. The total number of 6 constructs extracted was based on Eigenvalues greater than 1. The cumulative total variance of the 6 constructs was about 77%. The factor loadings obtained from employing principal component analysis for extracting the main constructs have been presented in **Table 3** and **Table 4**. The factor loadings were greater than 0.5, which is acceptable [42].

The psychological disorders causes-focused coping strategies were categorized under four main constructs: avoiding the cause, altering the cause, adapting to the cause and accepting the cause. The effects-focused coping strategies were also categorized under healthy and unhealthy coping strategies. The internal consistency and reliability of the construct measured were revealed to be good, as the Cronbach alpha value for all the 6 constructs were above 0.7. The values of the Cronbach alpha of each item if it is deleted from a group have also been presented. All the coping strategies analyzed in this study had their mean scores above 3.0. One sample T-test analysis with the test value set at 3, also revealed that all coping strategies measured in this study were significant as their p-values were less than 0.05 as shown in **Table 3** and **Table 4**. The null hypothesis stating that the individual coping strategies were not statistically significant will be rejected, and the alternative hypothesis accepted.

The Blom's fractional rank estimation test revealed the data were normally distributed and hence the results of the two construction groups could be compared for all the variables. A comparison of the mean scores of coping strategies adopted by the construction professionals and construction trade workers group was done using independent two-sample T-test and presented in **Table 5** and **Table 6** respectively. The comparison was done to determine whether the diverse nature of work of the two construction working groups could influence their perceived coping strategies adopted to deal with psychological issues. The coping strategies that revealed statistically significant differences between the two construction groups have their p-values marked with "*" as shown in the tables. The null hypothesis stating that the mean scores obtained by the two construction groups were not statistically significant will be rejected, and the alternative hypothesis accepted.

Table 3. Statistical results of causes focused coping strategies.

Causes-focused coping strategies	Mean	Std. Dev.	T-test (Value = 3) p-value (Sig.)	Factor loadings	Cronbach alpha
Construct 1: Avoiding the cause					0.919
1. Say no when limits are exceeded.	3.81	0.799	0.000	0.903	0.908
2. Avoid unnecessary arguments and debates that affect my emotions.	3.90	0.854	0.000	0.875	0.893
3. Turn off TV that shows sensitive pictures.	3.84	0.909	0.000	0.922	0.903
4. Avoid listening to bad news that leads to worry or anxiety.	3.80	0.810	0.000	0.893	0.908
5. End relationship with persons who consistently bring trouble.	3.97	0.901	0.000	0.836	0.899
6. Plan for emergency situations.	3.66	0.899	0.000	0.935	0.917
7. Withdraw from work duties or change jobs.	3.86	0.797	0.000	0.851	0.919
Construct 2: Altering the cause					0.793
8. Express how I feel about a situation.	3.87	0.905	0.000	0.857	0.749
9. Work extra hard to meet the challenge.	3.36	0.631	0.000	0.578	0.794
10. Delegate complicated tasks.	3.94	0.862	0.000	0.532	0.796
11. Adopt better skills for time management.	3.45	0.822	0.000	0.859	0.725
12. Take time off and relax from routine work.	3.43	0.693	0.000	0.706	0.785
13. Delay in working.	3.61	0.828	0.000	0.796	0.765
14. Seek support from friends or families.	3.47	0.778	0.000	0.704	0.754
Construct 3: Adapting to the cause					0.779
15. Compromise on things.	3.58	0.820	0.000	0.790	0.741
16. Assertive with the belief that situations are only temporary.	3.25	0.695	0.000	0.765	0.755
17. Optimistic attitude.	3.62	0.760	0.000	0.770	0.769
18. See every problem as a challenge or opportunity and make plans towards it.	3.88	0.905	0.000	0.807	0.684
19. Positive perspective about life events.	3.40	0.830	0.000	0.704	0.798
20. Report condition to supervisor or management.	3.72	0.866	0.000	0.752	0.730
Construct 4: Accepting that the cause cannot be changed					0.852
21. Do not waste time and energy on negative things that cannot be changed.	3.68	0.883	0.000	0.755	0.801
22. Avoid controlling uncontrollable situations.	3.52	0.733	0.000	0.789	0.834

Continued

23. React positively to situations that cannot change.	3.82	0.900	0.000	0.876	0.813
24. Let go of past events and move on.	3.42	0.761	0.000	0.662	0.852
25. Seek excitement from entertaining activities.	3.70	0.844	0.000	0.850	0.802

Table 4. Statistical results of effects focused coping strategies.

Effects-focused coping strategies	Mean	Std. Dev.	T-test (Value = 3) p-value (Sig.)	Factor loadings	Cronbach alpha
Construct 1: Unhealthy coping strategies					0.916
1. Poor sleeping either too much sleep or too little.	3.62	0.882	0.000	0.821	0.897
2. Use of drugs or pills for relaxation.	3.33	0.696	0.000	0.717	0.912
3. Excess smoking.	3.56	0.950	0.000	0.659	0.917
4. Drinking too much alcohol.	3.71	0.944	0.000	0.816	0.897
5. Poor eating habit such as under or over eating.	3.73	0.804	0.000	0.783	0.903
6. Take in lot of sweets.	3.37	0.740	0.000	0.798	0.907
7. Take in more caffeinated drinks.	3.91	0.846	0.000	0.880	0.908
8. Watching TV for hours away from active works.	3.46	0.886	0.000	0.745	0.906
9. Busy self with consistent working to avoid problems.	3.47	0.715	0.000	0.777	0.915
10. Take out stress on others such as yelling, anger, outbursts, lash out, physical or emotional violence.	3.88	0.905	0.000	0.853	0.904
Construct 2: Healthy coping strategies					0.909
11. Seek medical attention.	3.68	0.876	0.000	0.565	0.925
12. Consult a professional psychologist/counsellor.	3.83	0.856	0.000	0.777	0.893
13. Exercise regularly.	3.43	0.758	0.000	0.764	0.903
14. Regular sleeping schedule.	3.40	0.862	0.000	0.737	0.899
15. Prioritize work into urgent and not urgent ones.	3.65	0.888	0.000	0.859	0.895
16. Initiate and make new plans.	3.85	0.862	0.000	0.826	0.895
17. Set reasonable standards and avoid being a perfectionist.	3.63	0.888	0.000	0.530	0.906

Continued

18. Show gratitude and appreciate things instead of focusing on negative things.	3.70	0.844	0.000	0.823	0.897
19. Have forgiveness and belief that people are imperfect.	3.92	0.858	0.000	0.784	0.896
20. Avoid negative energy like resentment and anger.	3.48	0.905	0.000	0.771	0.897
21. Have a sense of humor.	3.60	0.982	0.000	0.724	0.899
22. Adopt positive lifestyle.	3.75	0.911	0.000	0.570	0.903

Table 5. Comparison of the statistical results obtained from the construction professionals' group^(a) and construction trade workers group^(b).

Causes-focused coping strategies	Group mean	Group RII %	Levene's test for equality of variances		Group rank
			F-value	Sig. (Equal)	
Construct 1: Avoiding the cause					
1. Say no when limits are exceeded.	3.66 ^a , 3.95 ^b	73.1 ^a , 79.2 ^b	0.149	0.700	9th ^a , 9th ^b
2. Avoid unnecessary arguments and debates that affect my emotions.	3.84 ^a , 3.97 ^b	76.8 ^a , 79.3 ^b	0.339	0.561	4th ^a , 7th ^b
3. Turn off TV that shows sensitive pictures.	3.65 ^a , 4.02 ^b	73.1 ^a , 80.4 ^b	0.507	0.477	10th ^a , 4th ^b
4. Avoid listening to bad news that leads to worry or anxiety.	3.60 ^a , 4.00 ^b	72.0 ^a , 80.9 ^b	0.658	0.418	13th ^a , 6th ^b
5. End relationship with persons who consistently bring trouble.	3.89 ^a , 4.05 ^b	77.9 ^a , 80.9 ^b	0.009	0.927	2nd ^a , 3rd ^b
6. Plan for emergency situations.	3.85 ^a , 3.47 ^b	76.9 ^a , 69.3 ^b	0.009	0.925	3rd ^a , 24th ^b
7. Withdraw from work duties or change jobs.	3.62 ^a , 4.10 ^b	72.4 ^a , 82.0 ^b	0.090	0.765	11th ^a , 1st ^b
Construct 2: Altering the cause					
8. Express how one feels about a situation.	3.67 ^a , 4.07 ^b	73.3 ^a , 81.3 ^b	0.727	0.395	8th ^a , 2nd ^b
9. I work extra hard to meet the challenge.	3.21 ^a , 3.51 ^b	64.1 ^a , 70.3 ^b	76.429	0.000*	23rd ^a , 20th ^b
10. Delegate complicated tasks.	4.13 ^a , 3.75 ^b	82.7 ^a , 75.1 ^b	0.703	0.402	1st ^a , 14th ^b
11. Adopt better skills for time management.	3.42 ^a , 3.48 ^b	68.4 ^a , 69.6 ^b	3.631	0.058	19th ^a , 22nd ^b
12. Take time off and relax from routine work.	3.35 ^a , 3.51 ^b	67.1 ^a , 70.3 ^b	20.015	0.000*	21st ^a , 21st ^b
13. Delay in working.	3.70 ^a , 3.53 ^b	74.0 ^a , 70.5 ^b	4.928	0.027*	7th ^a , 19th ^b
14. Seek support from friends or families.	3.48 ^a , 3.47 ^b	69.6 ^a , 69.3 ^b	0.889	0.346	17th ^a , 23rd ^b
Construct 3: Adapting to the cause					
15. Compromise on things.	3.59 ^a , 3.58 ^b	71.7 ^a , 71.6 ^b	11.819	0.001*	14th ^a , 18th ^b

Continued

16. Assertive with the belief that situations are only temporary.	3.12 ^a , 3.38 ^b	62.4 ^a , 67.6 ^b	46.696	0.000*	25th ^a , 25th ^b
17. Optimistic attitude.	3.48 ^a , 3.75 ^b	69.6 ^a , 75.1 ^b	12.704	0.000*	16th ^a , 13th ^b
18. See every problem as a challenge or opportunity and make plans towards it.	3.80 ^a , 3.97 ^b	76.0 ^a , 79.3 ^b	0.005	0.942	5th ^a , 8th ^b
19. Positive perspective about life events.	3.19 ^a , 3.61 ^b	63.7 ^a , 72.1 ^b	13.207	0.000*	24th ^a , 17th ^b
20. Report condition to supervisor or management.	3.43 ^a , 4.01 ^b	68.7 ^a , 80.1 ^b	17.210	0.000*	18th ^a , 5th ^b
Construct 4: Accepting that the cause cannot be changed					
21. Do not waste time and energy on negative things that cannot be changed.	3.61 ^a , 3.76 ^b	72.1 ^a , 75.2 ^b	1.149	0.285	12th ^a , 12th ^b
22. Avoid controlling uncontrollable situations.	3.38 ^a , 3.67 ^b	67.6 ^a , 73.3 ^b	38.114	0.000*	20th ^a , 15th ^b
23. React positively to situations that cannot change.	3.73 ^a , 3.91 ^b	74.5 ^a , 78.3 ^b	0.547	0.460	6th ^a , 10th ^b
24. Let go of past events and move on.	3.23 ^a , 3.61 ^b	64.7 ^a , 72.3 ^b	24.229	0.000*	22nd ^a , 16th ^b
25. Seek excitement from entertaining activities.	3.57 ^a , 3.83 ^b	71.3 ^a , 76.7 ^b	11.172	0.001*	15th ^a , 11th ^b

Values marked with (^a) represent scores from the construction professionals' group. Values marked with (^b) represent scores from the construction trade workers' group. Values that indicate a statistically significant difference between the variances between the two groups are marked with (*).

Table 6. Comparison of the statistical results obtained from the construction professionals' group^(a) and construction trade workers group^(b) for effects focused coping strategies.

Effects-focused coping strategies	Group mean	Group RII %	Levene's test for equality of variances		Group rank
			F-value	Sig. (Equal)	
Construct 1: Unhealthy coping strategies					
1. Poor sleeping either too much sleep or too little.	3.46 ^a , 3.78 ^b	69.2 ^a , 75.6 ^b	8.024	0.005*	15th ^a , 12th ^b
2. Use of drugs or pills for relaxation.	3.26 ^a , 3.41 ^b	65.2 ^a , 68.1 ^b	3.216	0.074	18th ^a , 21st ^b
3. Excess Smoking.	3.47 ^a , 3.65 ^b	69.5 ^a , 73.1 ^b	8.354	0.004*	14th ^a , 17th ^b
4. Drinking too much alcohol.	3.67 ^a , 3.74 ^b	73.5 ^a , 74.8 ^b	4.765	0.030*	7th ^a , 14th ^b
5. Poor eating habit such as under or over eating.	3.68 ^a , 3.78 ^b	73.6 ^a , 75.6 ^b	6.041	0.015*	6th ^a , 11th ^b
6. Take in lot of sweets.	3.16 ^a , 3.58 ^b	63.2 ^a , 71.6 ^b	67.204	0.000*	20th ^a , 18th ^b
7. Take in more caffeinated drinks.	3.71 ^a , 4.12 ^b	74.1 ^a , 82.4 ^b	0.302	0.583	4th ^a , 1st ^b
8. Watching TV for hours away from active works.	3.07 ^a , 3.85 ^b	61.5 ^a , 76.9 ^b	55.252	0.000*	22nd ^a , 9th ^b

Continued

9. Busy self with consistent working to avoid problems.	3.51 ^a , 3.43 ^b	70.3 ^a , 68.7 ^b	0.003	0.957	10th ^a , 20th ^b
10. Take out stress on others such as yelling, anger, outbursts, lash out, physical or emotional violence.	3.69 ^a , 4.08 ^b	73.7 ^a , 81.6 ^b	0.662	0.416	5th ^a , 2nd ^b
Construct 2: Healthy coping strategies					
11. Seek medical attention.	4.13 ^a , 3.22 ^b	82.7 ^a , 64.4 ^b	41.819	0.000*	1st ^a , 22nd ^b
12. Consult a professional psychologist/counsellor.	3.64 ^a , 4.01 ^b	72.8 ^a , 80.3 ^b	3.026	0.083	9th ^a , 4th ^b
13. Exercise regularly.	3.17 ^a , 3.69 ^b	63.5 ^a , 73.9 ^b	61.708	0.000*	19th ^a , 16th ^b
14. Regular sleeping schedule.	3.08 ^a , 3.72 ^b	61.6 ^a , 74.4 ^b	50.586	0.000*	21st ^a , 15th ^b
15. Prioritize work into urgent and not urgent ones.	3.48 ^a , 3.83 ^b	69.6 ^a , 76.5 ^b	9.135	0.003*	13th ^a , 10th ^b
16. Initiate and make new plans.	3.79 ^a , 3.91 ^b	75.7 ^a , 78.3 ^b	0.181	0.670	2nd ^a , 6th ^b
17. Set reasonable standards and avoid being a perfectionist.	3.49 ^a , 3.77 ^b	69.9 ^a , 75.3 ^b	5.133	0.024*	12th ^a , 13th ^b
18. Show gratitude and appreciate things instead of focusing on negative things.	3.41 ^a , 3.99 ^b	68.1 ^a , 79.9 ^b	2.041	0.154	16th ^a , 5th ^b
19. Have forgiveness and belief that people are imperfect.	3.79 ^a , 4.05 ^b	75.7 ^a , 81.1 ^b	0.243	0.622	3rd ^a , 3rd ^b
20. Avoid negative energy like resentment and anger.	3.51 ^a , 3.45 ^b	70.1 ^a , 69.1 ^b	2.762	0.098	11th ^a , 19th ^b
21. Have a sense of humour.	3.33 ^a , 3.86 ^b	66.7 ^a , 77.2 ^b	7.569	0.006*	17th ^a , 7th ^b
22. Adopt positive lifestyle.	3.65 ^a , 3.85 ^b	72.9 ^a , 77.1 ^b	31.169	0.000*	8th ^a , 8th ^b

Values marked with (a) represent scores from the construction professionals' group. Values marked with (b) represent scores from the construction trade workers' group. Values that indicate a statistically significant difference between the variances between the two groups are marked with (*).

Some significant differences in the weighting of the coping strategies were also revealed from the comparison of the statistical results obtained from the construction professionals' group and construction trade workers group. For instance: delegate complicated tasks as a causes-focused coping strategy was ranked 1st by the construction professionals but 14th by the construction trade workers. Withdraw from work duties or change jobs as a causes-focused coping strategy was rather ranked 1st by the construction trade workers but 11th by the construction professionals. Similarly, seek medical attention as an effects-focused coping strategy was ranked 1st by the construction professionals but 22nd by the construction trade workers. Take in more caffeinated drinks as an effects-focused coping strategy was rather ranked 1st by the construction trade workers but 4th by the construction professionals.

The results, however, also revealed some coping strategies had the same rank among the two construction groups. The causes-focused coping strategies that had the same rankings are: say no when limits are exceeded, assertive with the

belief that situations are only temporary and do not waste time and energy on negative things that cannot be changed, which were ranked 9th, 25th, and 12th respectively by the two construction groups. The effects-focused coping strategies that had the same rankings are: have forgiveness and belief that people are imperfect and adopt positive lifestyle, which were ranked 3rd and 8th respectively by the two construction groups.

Levene's Test for equality of variances among the two construction working groups as presented in **Table 5** and **Table 6** indicated that the mean scores of the two construction groups were statistically significantly different for 11 of the causes-focused coping strategies and 13 of the effects-focused coping strategies. These items have their p-values less than 0.05 and marked with (*) as shown in **Table 5** and **Table 6**. The null hypothesis that assumes no statistically significant differences between the mean scores of the two construction groups will be rejected and the alternative hypothesis that states otherwise will be accepted for these items of coping strategies. However, the null hypothesis will not be rejected for the other factors that revealed no statistically significant differences and assumed equal variances for the two construction working groups.

5.1. Coping Strategies Adopted for the Causes of Occupational Psychological Disorders

The coping strategies revealed and measured in this research study shows a range of positive and negative coping strategies adopted as mechanisms to mitigate the causes of psychological disorders. The causes of psychological disorders as indicated previously could be due to work, personality or interpersonal relationships with others [31] [39]. The coping strategies were categorized under the following sub-headings: avoiding the cause, altering the cause, adapting to the cause and accepting the cause. Certain causes of psychological disorders could be controlled or changed, the coping strategies in dealing with such causes could be to avoid the cause or alter the cause [3] [19]. On the other hand, certain causes are inevitable and cannot be controlled, the coping strategies in dealing with such causes could be to adapt to the cause or accept the cause [17].

Avoiding the cause

Avoiding the cause-coping strategies are means to escape from a problem or challenging situation, and these efforts are usually wishful expressions of one's thoughts [44]. Avoiding the cause coping strategies that were revealed in this study included: saying no when limits are exceeded, planning for emergency situations, withdrawing from work duties or changing jobs, ending relationship with persons who consistently bring trouble and avoiding unnecessary arguments and debates that affect ones' emotions. The difference in the mean scores for the avoid the causes coping strategies among the two construction groups could be due to various factors such as differences in their nature of work, educational background, professional skills and level of experience. The causes that can be avoided by the construction trade workers are those usually related to

personality characteristics and interpersonal relationships [45]. Construction professionals could also only avoid work-related causes such as the complexity of work methods and quality demands, where they have a certain degree of autonomy or control over their works [46]. Work-related factors that may cause both the construction professional and construction trade workers psychological disorders such as job demands, cannot be avoided entirely, but only to an extent level where demand exceeds the employee's resources and personal capabilities [24] [38].

A comparison of the findings from this study and the findings from previous studies in the construction industry was done to identify similar coping strategies categorized under avoiding the cause. It was identified that some of the findings of this study were similar and related to previous studies findings, whereas some findings were not found in previous studies. For instance; saying no when limits are exceeded revealed by both the construction trade workers and professionals as a coping strategy to avoid the cause is similar to refusing stressful tasks revealed by researchers like Leung, *et al.* [24] and Boschman, *et al.* [7]. Other coping strategies revealed by this study such as: withdrawing from work duties or changing jobs, planning for emergency situations, avoiding unnecessary arguments and debates that affect my emotions and ending relationship with persons who consistently bring trouble also relate respectively to previous findings such as: absenteeism [32], plan ahead for emergency situations [16], avoiding phone calls [46], and social isolation [28]. This indicates that these coping strategies adopted as cognitive and behavioral efforts to avoid the cause of psychological disorders are common among construction personnel.

Construction personnel who adopt these coping strategies, believe that the cause or problem will somewhat be solved without them putting any efforts to it [30]. Distancing is also a part of the coping strategies adopted to avoid a cause and involves detaching oneself from a perceived problem while creating a positive outlook [45]. Construction personnel who adopt these coping strategies will try not to let a problem affect them personally and behaves as if nothing has happened [40]. These coping strategies of avoiding the cause could enhance the psychological well-being of construction personnel, but has negative consequences on task performance [2] [39].

Altering the cause

Altering the cause involves confrontive coping strategies adopted by individuals to overcome or deal with challenging situations [35]. These coping strategies are associated with aggressive efforts and encompass certain degrees of risk taking and hostility [44]. Altering the cause using confrontive coping strategies have been proved by earlier researchers to be efficient in dealing with work-related psychological health factors, that could lead to employees' psychological disorders [45].

Altering the cause coping strategies that were revealed to be significant across the two construction groups included: working extra hard to meet the challenge,

delegating complicated tasks, adopting better skills for time management and delay in working. The differences in the mean scores among the two construction groups for the altering the cause coping strategies could be due to various factors such as differences in job responsibilities, professional skills and level of commitment among the construction personnel.

Construction trade workers could adopt altering the cause coping strategies to deal with work-related issues such as inadequate resource allocation, by confronting management for a change in the situation [1]. Construction professionals could alter the work-related causes by adopting the coping strategies of instrumental support seeking. Instrumental support seeking for assistance, information or advice from persons such as senior colleagues, friends and colleague workers are essential coping strategies to alter the cause of psychological disorders experienced by employees [14] [19]. Construction trade workers could seek support from experienced or senior colleagues to resolve a problem; this coping strategy facilitates cooperation among construction personnel, which results in improved project performances [2].

A comparison of the findings from this study and the findings from previous studies in the construction industry was done to identify similar coping strategies categorized under altering the cause. It was identified that some of the findings of this study were similar and related to previous studies findings, whereas some findings were not found in previous studies. Coping strategies revealed by this study such as: expressing how one feels about a situation, working extra hard to meet the challenge, delegating complicated tasks, adopting better skills for time management, taking time off and relaxing from routine work, delaying in working and seeking support from friends or families relate respectively to previous findings such as: talking about the situation [24], reappraising and finding controllable variables [32], consulting senior or experienced colleagues [16], improving on time management [46], sleeping or taking rests [1], doing or thinking of unrelated things [28], and seeking emotional support by talking with friends or family for advice [24]. This indicates that these coping strategies adopted as cognitive and behavioral efforts to alter the cause of psychological disorders are common among construction personnel.

Adapting to the cause

Adapting to the cause involves the construction employee acknowledging his responsibility for or role in the problem and attempts to put things right [18]. Adapting to the cause coping strategies are planful problem-solving coping strategies, which are overt attempts, self-initiated by individuals to manage a problem and its consequences directly [1] [20]. Adapting to the cause coping strategies that were revealed across the two construction groups included: seeing every problem as a challenge or opportunity and making plans towards it, compromising on things. The differences in the mean scores among the two construction groups for adapting to the cause coping strategies could also be due to various factors such as differences in nature of work, professional skills, and job responsibilities.

Construction personnel facing work-related problems such as work overload and tight timeframes, could adapt to the cause and adopt planful coping strategies to effectively plan their work tasks, resource allocation and daily time schedules [20] [24]. For instance, a construction worker, who is in charge of delivering carpentry works, will be responsible for any delays that occur. Both the construction professional and the trade worker will have to assess the problem and then initiate new plans to speed up the progress of the task, in order to avoid psychological disorders such as stress and depression [7] [46]. Adapting to the cause coping strategies will, therefore, help prevent construction personnel from experiencing psychological disorders and also enhance their job performance [2].

A comparison of the findings from this study and the findings from previous studies in the construction industry was done to identify similar coping strategies categorized under adapting to the cause. It was identified that some of the findings of this study were similar and related to previous studies findings, whereas some findings were not found in previous studies. Coping strategies revealed by this study such as: compromising on things, being assertive with the belief that situations are only temporary, have optimistic attitude and seeing every problem as a challenge or opportunity and make plans towards it, relate respectively to previous findings such as: compromising [46], having positive perspective of situations [16], accepting and learning from mistake [32], and enquiring more about problem [28]. This also indicates that these coping strategies adopted as cognitive and behavioral efforts to adapt to the cause of psychological disorders are common among construction personnel.

Accept the cause cannot be changed

Some sources of psychological disorders cannot be avoided such as the death of a loved one, illness, company or national problem [31]. It is better to accept these situations instead of railing over things that cannot be changed, even though it may seem difficult but will be easier over time [4] [14]. Accepting the cause involves positive reappraisal, which are efforts to derive positive meanings from inevitable causes such as work-related challenges [29] [38].

Coping strategies that were revealed across the two groups to accept that the cause cannot be changed included: avoiding controlling uncontrollable situations and letting go of past events do not waste time and energy on negative things that cannot be changed. The differences in the mean scores among the two construction groups for the accepting the cause coping strategies could be due to various factors such as differences in their nature of work, educational background, level of experience, professional skills, job responsibilities and level of commitment among the construction personnel. Construction personnel who adopt these coping strategies tend to reappraise problems or situations arising from their work, tend to focus on the opportunities and perceive them as means for personal growth and career development [25] [38]. Acceptance through positive reappraisal can be effective in addressing work-related causes leading to

psychological disorders of construction personnel [44].

A comparison of the findings from this study and the findings from previous studies in the construction industry was done to identify similar coping strategies categorized under accepting that the cause cannot be changed. It was identified that some of the findings of this study were similar and related to previous studies findings, whereas some findings were not found in previous studies. Coping strategies revealed by this study such as: letting go of past events and moving on as well as seeking excitement from entertaining activities, relate respectively to previous findings such as: making self-adjustments [16] and listening to music [1]. This indicates that these coping strategies adopted as cognitive and behavioral efforts to accept that the cause of psychological disorders cannot be changed are common among construction personnel.

5.2. Coping Strategies Adopted for the Effects of Occupational Psychological Disorders

The effects of psychological disorders on construction personnel are associated with emotional health symptoms such as: anxiety [35], distress [20], depression [43], and physical health symptoms such as: back pain [2], headaches [31], sleep disorders [46] and others. The coping strategies revealed in this study as efforts to deal with the effects of psychological ill-being were categorized under unhealthy and healthy coping strategies.

Unhealthy coping strategies

Some construction personnel adopt coping strategies such as overeating, smoking or drinking as behavioural expressions to reduce unpleasant emotions or effects of psychological disorders such as tiredness [17] [24]. Unhealthy or negative coping strategies are also known as escapist or maladaptive coping strategies, which are usually adopted as means for emotional discharge [19]. These include the excess consumption of narcotics, nicotine, alcohol, and other substances [39].

Unhealthy coping strategies that were revealed in this study included: use of drugs or pills for relaxation, taking in more caffeinated drinks and taking out stress on others, excess alcohol intake and excess smoking. The difference in the mean scores could be due to various factors such as differences in personality characteristics, professional skills and educational background among the construction personnel. Previous studies compared with the findings of this study also revealed coping strategies that relate to the unhealthy coping strategies identified in this study. For instance: use of narcotics [20], excess smoking [7], drinking excess alcohol [18], eating a lot [24], excess intake of nicotine or coffee [46], watching DVDs [1] and scolding or taking out anger or stress on others [28]. Excess smoking and alcohol intake are prevalent coping strategies among construction workers generally [20]. This indicates that these unhealthy coping strategies adopted as cognitive and behavioral efforts to deal with the effects of psychological ill-being conditions are common among construction personnel.

Some construction employees consume alcohol or smoke cigarette to reduce

tension, change their condition of psychological health and cope with the triggers of psychological disorders [37]. However, these coping strategies could relieve the effects of psychological disorders such as stress only on a temporary basis [2]. These unhealthy coping strategies are related positively to the poor health outcomes of construction personnel and are posited as the direct link between work-related ill-being factors and their effects [26].

Healthy coping strategies

Healthy coping strategies that were revealed in this study included: seeking medical attention, exercising regularly and prioritizing work into urgent and not urgent ones, setting reasonable standards and avoiding being a perfectionist. The differences in the mean scores among the two constructions for healthy coping strategies could be due to various factors such as differences in personality characteristics, educational background, job responsibilities, professional skills and level of commitment among the construction personnel.

Previous studies compared with the findings of this study also revealed coping strategies that relate to the healthy coping strategies identified in this study such as: attending social gatherings with friends [1], seeking emotional support by talking with friends or family for advice [16], sleeping or taking rests [46], physical exercise [20]. This also indicates that these healthy coping strategies adopted as cognitive and behavioral efforts to deal with the effects of psychological disorders are common among construction personnel. Healthy effects-focused coping strategies include affective regulation adopted to control ones' emotions, suppress impulsive acts and adopt positive thinking to bolster morale [30] [45].

6. Conclusions

This study sought to explore the coping strategies adopted by construction professionals and construction trade workers to deal with the causes and effects of psychological disorders, this study employed the methods of focus group study and quantitative survey in Ghana. The focus group study provided in-depth information on the coping strategies adopted by construction professionals and construction trade workers in Ghana to deal with psychological health issues. The participants revealed 25 items as causes-focused coping strategies and revealed 22 items as effects-focused coping strategies. The reliability and validity of the study findings were ensured using multiple sources of data collection such as working sheets, audio recording, and note-taking.

Quantitative data analyses were done. The methods of exploratory data analysis were employed, and the psychological health causes-focused coping strategies were categorized under four sub-headings: avoiding the cause, altering the cause, adapting to the cause and accepting the cause. The effects-focused coping strategies were also categorized under healthy and unhealthy coping strategies. One sample T-test was employed, and all coping strategies measured in this study were revealed to be significant as their p-values were less than 0.05. The null hypothesis stating that the individual coping strategies were not statistically significant will be rejected, and the alternative hypothesis is accepted.

A comparison of the mean scores of coping strategies adopted by the construction professionals and construction trade workers group was done using independent two-sample. There were some statistically significant differences between the mean scores of the coping strategies adopted by the two construction groups as their p-values marked were less than 0.05. The null hypothesis stating that the mean scores obtained by the two construction groups were not statistically significant will be rejected, and the alternative hypothesis is accepted for those coping strategies. For instance, it was revealed that unhealthy coping strategies such as poor eating habits, excess smoking and excess alcohol intake were highly adopted by the construction trade workers than the construction professionals. The reason could be due to the fact that construction professionals are highly educated than construction trade workers and are fully aware of the consequences of unhealthy coping strategies.

Some of the coping strategies had significantly different rankings among the two construction groups. For instance: delegate complicated tasks as a causes-focused coping strategy were ranked 1st by the construction professionals but 14th by the construction trade workers. Withdraw from work duties or change jobs as a causes-focused coping strategy was rather ranked 1st by the construction trade workers but 11th by the construction professionals. This could be due to various factors such as differences in their nature of work, professional skills, educational background, level of experience, job responsibilities and level of commitment among the construction personnel. The results, however, also revealed that some coping strategies had the same rank among the two construction groups. For instance, saying no when limits are exceeded as a causes-focused coping strategy was ranked 9th and adopting positive lifestyle as an effects-focused coping strategy was ranked 8th by the two construction groups.

A comparison of the findings from the study with findings from previous related research works in the construction industry was also done to indicate whether similar coping strategies were revealed across the various research works. Some similar findings were identified such as: seeking support from colleagues, withdrawing from work duties, use of drugs or pills for relaxation, excess alcohol intake and excess smoking. This indicates that these similar coping strategies are commonly adopted by construction personnel as cognitive and behavioral efforts to deal with the causes or effects of psychological disorders. However, the majority of the findings were peculiar to this study and have not been revealed by the previous researchers in this field. This study provided a longer list of various coping strategies as compared to the previous research works. The findings from this study add to existing knowledge on coping strategies adopted by construction personnel as efforts or responses to psychological issues.

Appropriate coping strategies adopted to deal with or manage the causes and effects of psychological disorders are essential for the well-being and productivity of the construction personnel. This study recommends psychological health

support systems in the construction industry in Ghana and globally. There is a need to enforce healthy coping strategies and education of the construction employees on the negative consequences of the unhealthy coping strategies adopted by them to deal with psychological health issues. This study also recommends that construction personnel engage in recreational and relaxation activities as a coping strategy to moderate the effects of psychological disorders. The appropriate coping activities recommended include: spending time with family and or friends, doing physical or breathing exercises, spending time in nature, cycling and watching funny videos, nurturing self, taking time to relax and having fun, to keep one in a better position to face inevitable life challenges. These coping activities adopted as cognitive and behavioral efforts to deal with the effects of psychological disorders are a necessity for one's life and these activities not considered to be luxurious.

It is recommended that psychological issues be openly discussed without intimidation to increase its awareness to all persons in the construction industry. This will help reduce common mental and behavioral problems which exist in all professions, as psychological disorders are known to permeate all aspects of life and have no respecter of persons. This research study is a preliminary step in developing a preventive psychological health management model for construction employees that seeks to reduce employees' vulnerability and build their individual coping capabilities to prevent psychological disorders.

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Data Availability Statement

All data generated or analyzed during the study are included in this article. Data generated or analyzed during the study are also available from the corresponding author by request.

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

References

- [1] Chan, I.Y.S., Leung, M.Y. and Liu, A.M.M. (2016) Occupational Health Management System: A Study of Expatriate Construction Professionals. *Accident Analysis and Prevention*, **93**, 280-290. <https://doi.org/10.1016/j.aap.2015.11.003>

- [2] Leung, M.Y., Chan, I.Y.S. and Cooper, C.L. (2014) Stress Management in the Construction Industry. John Wiley & Sons, West Sussex.
<https://doi.org/10.1002/9781118456361>
- [3] Xiong, B., Skitmore, M. and Xia, B. (2015) Exploring and Validating the Internal Dimensions of Occupational Stress: Evidence from Construction Cost Estimators in China. *Construction Management and Economics*, **33**, 495-507.
<https://doi.org/10.1080/01446193.2015.1050967>
- [4] Jacobsen, H.B., Caban-Martinez, A., Onyebeke, L.C., Sorensen, G., Dennerlein, J.T. and Reme, S.E. (2013) Construction Workers Struggle with a High Prevalence of Mental Distress, and This Is Associated with Their Pain and Injuries. *Journal of Occupational and Environmental Medicine*, **55**, 1197-1204.
<https://doi.org/10.1097/JOM.0b013e31829c76b3>
- [5] Alavinia, S.M., van Duivenbooden, C. and Burdorf, A. (2007) Influence of Work-Related Factors and Individual Characteristics on Work Ability among Dutch Construction Workers. *Scandinavian Journal of Work, Environment and Health*, **33**, 351-357.
<https://doi.org/10.5271/sjweh.1151>
- [6] Meerding, W.J., IJzelenberg, W., Koopmanschap, M.A., Severens, J.L. and Burdorf, A. (2005) Health Problems Lead to Considerable Productivity Loss at Work among Workers with High Physical Load Jobs. *Journal of Clinical Epidemiology*, **58**, 517-523. <https://doi.org/10.1016/j.jclinepi.2004.06.016>
- [7] Boschman, J.S., Van Der Molen, H.F., Sluiter, J.K. and Frings-Dresen, M.H. (2013) Psychosocial Work Environment and Mental Health among Construction Workers. *Applied Ergonomics*, **44**, 748-755. <https://doi.org/10.1016/j.apergo.2013.01.004>
- [8] Leung, M.Y., Liang, Q. and Yu, J. (2016) Development of a Mindfulness-Stress-Performance Model for Construction Workers. *Construction Management and Economics*, **34**, 110-128. <https://doi.org/10.1080/01446193.2016.1147652>
- [9] Gatti, U.C., Migliaccio, G.C., Bogus, S.M. and Schneider, S. (2014) An Exploratory Study of Relationship between Construction Workforce Physical Strain and Task Level Productivity. *Construction Management and Economics*, **32**, 548-564.
<https://doi.org/10.1080/01446193.2013.831463>
- [10] Cooper, C.L. and Dewe, P. (2008) Wellbeing: Absenteeism, Presenteeism, Costs and Challenges. *Occupational Medicine*, **58**, 522-524.
<https://doi.org/10.1093/occmed/kqn124>
- [11] Finney, C., Stergiopoulos, E., Hensel, J., Bonato, S. and Dewa, C.S. (2013) Organizational Stressors Associated with Job Stress and Burnout in Correctional Officers: A Systematic Review. *BMC Public Health*, **13**, 82-95.
<https://doi.org/10.1186/1471-2458-13-82>
- [12] Leung, M.Y., Chan, I.Y.S. and Yu, J. (2012) Preventing Construction Worker Injury Incidents through the Management of Personal Stress and Organizational Stressors. *Accident Analysis and Prevention*, **48**, 156-166.
<https://doi.org/10.1016/j.aap.2011.03.017>
- [13] Health and Safety Executive (HSE) (2007) An Analysis of the Prevalence and Distribution of Stress in the Construction Industry. RR518 Research Report, Health and Safety Executive.
- [14] Akangbe, I. and Tetteh, I. (2015) Occupational Stress and Effective Coping Strategies in Nursing. Published Bachelor Thesis in Nursing, Lahti University of Applied Sciences, Lahti.
- [15] Vernarec, E. and Phillips, K. (2001) How to Cope with Job Stress. *Journal of Nursing*, **64**, 44-48.

- [16] Yip, B., Rowlinson, S. and Siu, O.L. (2008) Coping Strategies as Moderators in the Relationship between Role Overload and Burnout. *Construction Management and Economics*, **26**, 871-882. <https://doi.org/10.1080/01446190802213529>
- [17] Tillmann, J.N. and Beard, M.T. (2001) Manager's Healthy Lifestyles, Coping Strategies, Job Stressors and Performance: An Occupational Stress Model. *Journal of Theory Construction and Testing*, **5**, 7-16.
- [18] Chan, I.Y.S., Leung, M.Y. and Yuan, T. (2014). Structural Relationships between Cultural Values and Coping Behaviours of Professionals in the Stressful Construction Industry. *Engineering, Construction, Architectural Management*, **21**, 133-151.
- [19] Quick, J.C., Wright, T.A., Adkins, J.A., Nelson, D.L. and Quick, J.D. (2013) Preventive Stress Management in Organizations. 2nd Edition, American Psychological Association, Washington DC. <https://doi.org/10.1037/13942-000>
- [20] Bowen, P., Edwards, P., Lingard, H. and Cattell, K. (2014) Workplace Stress, Stress Effects, and Coping Mechanisms in the Construction Industry. *Journal of Construction Engineering and Management*, **140**, Article ID: 04013059. [https://doi.org/10.1061/\(ASCE\)CO.1943-7862.0000807](https://doi.org/10.1061/(ASCE)CO.1943-7862.0000807)
- [21] Ashleigh, M. and Mansi, A. (2012) The Psychology of People in Organizations. Pearson, London.
- [22] Jassawalla, A., Asgary, N. and Sashittal, H. (2006) Managing Expatriates: The Role of Mentors. *International Journal of Commerce Management*, **16**, 130-140. <https://doi.org/10.1108/10569210680000212>
- [23] Wang, X. and Nayir, D.Z. (2006) How and When Is Social Networking Important? Comparing European Expatriate Adjustment in China and Turkey. *Journal of International Management*, **12**, 449-472. <https://doi.org/10.1016/j.intman.2006.02.014>
- [24] Leung, M.Y., Liu, A.M.M. and Wong, M.K. (2006) Impact of Stress-Coping Behaviors on Estimation Performance. *Construction Management and Economics*, **24**, 55-67. <https://doi.org/10.1080/01446190500228381>
- [25] Lin, N.Y. (2007) Occupational Stress, Personality and Coping Strategies among Aircraft Maintenance Personnel in Hong Kong. Published Thesis, City University of Hong Kong, Hong Kong.
- [26] Sinha, R., Lacadie, C.M., Constable, R.T. and Seo, D. (2016) Dynamic Neural Activity during Stress Signals Resilient Coping. *Proceedings of the National Academy of Sciences*, **113**, 8837-8842. <https://doi.org/10.1073/pnas.1600965113>
- [27] Linehan, M.M. (2018) Cognitive-Behavioral Treatment of Borderline Personality Disorder. Guilford Publications, New York.
- [28] Yip, B. and Rowlinson, S. (2006) Coping Strategies among Construction Professionals: Cognitive and Behavioural Efforts to Manage Job Stressors. *Journal for Education in the Built Environment*, **1**, 70-79. <https://doi.org/10.11120/jebe.2006.01020070>
- [29] Kwasnicka, D., Dombrowski, S.U., White, M. and Sniehotta, F. (2016) Theoretical Explanations for Maintenance of Behaviour Change: A Systematic Review of Behaviour Theories. *Health Psychology Review*, **10**, 277-296. <https://doi.org/10.1080/17437199.2016.1151372>
- [30] Yeung, N.C., Lu, Q., Wong, C.C. and Huynh, H.C. (2016) The Roles of Needs Satisfaction, Cognitive Appraisals, and Coping Strategies in Promoting Posttraumatic Growth: A Stress and Coping Perspective. *Psychological Trauma: Theory, Research, Practice, and Policy*, **8**, 284-292. <https://doi.org/10.1037/tra0000091>
- [31] Sears, S. and Kraus, S. (2009) I Think Therefore I Om: Cognitive Distortions and

- Coping Style as Mediators for the Effects of Mindfulness Meditation on Anxiety, Positive and Negative Affect, and Hope. *Journal of Clinical Psychology*, **65**, 561-573. <https://doi.org/10.1002/jclp.20543>
- [32] Haynes, N.S. and Love, P.E.D. (2004) Psychological Adjustment and Coping among Construction Project Managers. *Construction Management and Economics*, **22**, 129-140. <https://doi.org/10.1080/0144619042000201330>
- [33] Grant, S. and Langan-Fox, J. (2006) Occupational Stress, Coping and Strain: The Combined/Interactive Effect of the Big Five Traits. *Personality and Individual Differences*, **41**, 719-732. <https://doi.org/10.1016/j.paid.2006.03.008>
- [34] Wood, S. and Ogbonnaya, C. (2018) High-Involvement Management, Economic Recession, Well-Being, and Organizational Performance. *Journal of Management*, **44**, 3070-3095. <https://doi.org/10.1177/0149206316659111>
- [35] Jacobs, S. and Blustein, D. (2008) Mindfulness as a Coping Mechanism for Employment Uncertainty. *The Career Development Quarterly*, **57**, 174-180. <https://doi.org/10.1002/j.2161-0045.2008.tb00045.x>
- [36] Greenberg, M.K. (2001) Effectiveness of a Comprehensive Worksite Stress Management Program: Combining Organizational and Individual Interventions. *International Journal of Stress Management*, **8**, 49-62. <https://doi.org/10.1023/A:1009553413537>
- [37] Singh, R. (2008) Chronic Stress, Drug Use, and Vulnerability to Addiction. *Annals of the New York Academy of Sciences*, **1141**, 105-130. <https://doi.org/10.1196/annals.1441.030>
- [38] Lambert, V.A., Lambert, C.E., Itano, J., Inouye, J., Kim, S., Kuniviktikul, W., Sitthimongkol, Y., Pongthavornkamol, K., Gasemgitvattana, S. and Ito, M. (2004) Cross-Cultural Comparison of Workplace Stressors, Ways of Coping and Demographic Characteristics as Predictors of Physical and Mental Health among Hospital Nurses in Japan, Thailand, South Korea and the USA. *International Journal of Nursing Studies*, **41**, 671-684. <https://doi.org/10.1016/j.ijnurstu.2004.02.003>
- [39] Penley, J.A., Tomaka, J. and Wiebe, J.S. (2002) The Association of Coping to Physical and Psychological Health Outcomes: A Meta-Analytic Review. *Journal of Behavioral Medicine*, **25**, 551-603. <https://doi.org/10.1023/A:1020641400589>
- [40] Leung, M.Y., Wong, M.K. and Oloke, D. (2003) Coping Behaviors of Construction Estimators in Stress Management. *19th Annual ARCOM Conference*, Brighton, 3-5 September 2003, Vol. 1, 271-277.
- [41] Norusis, M.J. (2001) SPSS 12.0, Statistical Procedures Companion. Prentice Hall, Upper Saddle River.
- [42] Lo, R. (2018) Advanced Quantitative Methods, APSS6003. Unpublished Material: Lecture Notes. Hong Kong Polytechnic University, Hong Kong.
- [43] Enshassi, A., Al Swaity, E. and Arain, F. (2016) Investigating Common Causes of Burnout in the Construction Industry. *International Journal of Construction Project Management*, **8**, 1-15.
- [44] Chapman, R. and Orb, A. (2001) Coping Strategies in Clinical Practice: The Nursing Students' Lived Experience. *Contemporary Nurse*, **11**, 95-102. <https://doi.org/10.5172/conu.11.1.95>
- [45] Wang, W., Kong, A.W.M. and Chair, S.Y. (2010) Relationship between Job Stress Level and Coping Behaviors Used by Hong Kong Nurses Working in an Acute Surgical Unit. *Applied Nursing Research Journal*, **24**, 238-243. <https://doi.org/10.1016/j.apnr.2009.09.003>

- [46] Chan, I.Y.S., Leung, M.Y. and Yu, S.W. (2012) Managing Stress of Hong Kong Expatriate Construction Professionals in Mainland China: A Focus Group Studies to Exploring Individual Coping Strategies and Organizational Support. *Journal of Construction Engineering and Management*, **138**, 1150-1160.
[https://doi.org/10.1061/\(ASCE\)CO.1943-7862.0000533](https://doi.org/10.1061/(ASCE)CO.1943-7862.0000533)

Appendix

Research questionnaire designed for respondents

- 1) Which of these statements refer to you most as efforts to cope with the causes of psychological health conditions? Please indicate by ticking the appropriate number. **Note: 1 = More Unlikely, 2 = Unlikely, 3 = Neutral, 4 = Likely, 5 = Most Likely.**

ITEM	STATEMENT	RANKS				
1.	Say no when limits are exceeded.	1	2	3	4	5
2.	Avoid unnecessary arguments and debates that affect my emotions.	1	2	3	4	5
3.	Express how I feel about a situation.	1	2	3	4	5
4.	Compromise on things.	1	2	3	4	5
5.	Assertive with the belief that situations are only temporary.	1	2	3	4	5
6.	Do not waste time and energy on negative things that cannot be changed.	1	2	3	4	5
7.	Work extra hard to meet the challenge.	1	2	3	4	5
8.	Optimistic attitude.	1	2	3	4	5
9.	Avoid controlling uncontrollable situations.	1	2	3	4	5
10.	React positively to situations that cannot change.	1	2	3	4	5
11.	Turn off TV that shows sensitive pictures.	1	2	3	4	5
12.	Avoid listening to bad news that leads to worry or anxiety.	1	2	3	4	5
13.	See every problem as a challenge or opportunity and make plans towards it.	1	2	3	4	5
14.	Let go of past events and move on.	1	2	3	4	5
15.	Positive perspective about life events.	1	2	3	4	5
16.	End relationship with persons who consistently bring trouble.	1	2	3	4	5
17.	Delegate complicated tasks.	1	2	3	4	5
18.	Plan for emergency situations.	1	2	3	4	5
19.	Adopt better skills for time management.	1	2	3	4	5
20.	Withdraw from work duties or change jobs.	1	2	3	4	5
21.	Take time off and relax from routine work.	1	2	3	4	5
22.	Delay in working.	1	2	3	4	5
23.	Report condition to supervisor or management.	1	2	3	4	5
24.	Seek support from friends or families.	1	2	3	4	5
25.	Seek excitement from entertaining activities.	1	2	3	4	5

- 2) Which of these statements refer to you most as efforts to cope with the effects of psychological health conditions? Please indicate by ticking the appropriate number. **Note: 1 = More Unlikely, 2 = Unlikely, 3 = Neutral, 4 = Likely, 5 = Most Likely.**

ITEM	STATEMENT	RANKS				
1.	Poor sleeping either too much sleep or too little.	1	2	3	4	5
2.	Use of drugs or pills for relaxation.	1	2	3	4	5
3.	Excess smoking.	1	2	3	4	5
4.	Drinking too much alcohol.	1	2	3	4	5
5.	Poor eating habit such as under or over eating.	1	2	3	4	5
6.	Take in lot of sweets.	1	2	3	4	5
7.	Take in more caffeinated drinks.	1	2	3	4	5
8.	Watching TV for hours away from active works.	1	2	3	4	5
9.	Busy self with consistent working to avoid problems.	1	2	3	4	5
10.	Take out stress on others such as yelling, anger, outbursts, lash out, physical or emotional violence.	1	2	3	4	5
11.	Seek medical attention.	1	2	3	4	5
12.	Consult a professional psychologist/counsellor.	1	2	3	4	5
13.	Exercise regularly.	1	2	3	4	5
14.	Regular sleeping schedule.	1	2	3	4	5
15.	Prioritize work into urgent and not urgent ones.	1	2	3	4	5
16.	Initiate and make new plans.	1	2	3	4	5
17.	Set reasonable standards and avoid being a perfectionist.	1	2	3	4	5
18.	Show gratitude and appreciate things instead of focusing on negative things.	1	2	3	4	5
19.	Have forgiveness and belief that people are imperfect.	1	2	3	4	5
20.	Avoid negative energy like resentment and anger.	1	2	3	4	5
21.	Have a sense of humour.	1	2	3	4	5
22.	Adopt positive lifestyle.	1	2	3	4	5