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ABSTRACT

Despite more than three decades of research, there is a limited understanding of the transactional processes of appraisal, stress and coping. This has led to calls for more focused research on the entire process that underlies these variables. To date, there remains a paucity of such research. The present study examined Lazarus and Folkman's (1984) transactional model of stress and coping. One hundred and twenty nine Australian participants with full time employment (i.e. nurses and administration employees) were recruited. There were 49 male (age mean = 34, SD = 10.51) and 80 female (age mean = 36, SD = 10.31) participants. The analysis of three path models indicated that in addition to the original paths, which were found in Lazarus and Folkman's transactional model (primary appraisal→secondary appraisal→stress→coping), there were also direct links between primary appraisal and stress level time one and between stress level time one to stress level time two. This study has provided additional insights into the transactional process which will extend our understanding of how individuals appraise, cope and experience occupational stress.

INTRODUCTION

The transactional model of stress and coping (Lazarus & Folkman, 1984) has been extensively researched, and at present, its theoretical underpinnings are widely accepted by researchers and practitioners (e.g. Yu, Chiu, Lin, Wang & Chen, 2007; Cooper, Dewe & O'Driscoll, 2001; Folkman & Lazarus, 1985; Folkman, Lazarus, Dunkel-Schetter, DeLongis & Gruen, 1986). This model's central tenet is that a potentially stressful event will trigger the primary appraisal process in which an individual assesses the degree of threat in relation to his or her wellbeing. When an event is perceived as threatening or a challenge, the secondary appraisal process provides a global assessment of the individual's coping resources and ability to manage the threat/challenge. Coping responses are initiated after the cognitive appraisals and the eventual psycho-physiological experience (stress outcomes) of this potentially stressful event depends on the effectiveness of one's cognitive appraisals and coping processes. The stress outcomes will then feed back to the cognitive appraisal stages for further actions if required.

It is worth noting that the sequence of influence between primary appraisal and secondary appraisal does not always present itself as one being more important than the other (i.e. primary vs. secondary), or that one always precedes the other (Lazarus & Folkman, 1984). Their relationship is far more dynamic but as a basic process Lazarus and Folkman conceptualised a linear sequence flowing from primary to secondary appraisals to coping and eventually, to stress outcomes as a reflection of the basic pathways within the dynamic process. Therefore the key premise of Lazarus and Folkman's transactional model is that primary appraisal, secondary appraisal and coping strategies mediate the relationship between stressor and the individual's stress outcomes.

Folkman and Lazarus (1991) conceptualised coping as a complex, organised sequence of behaviours that include cognitive appraisal, action impulses, patterned

somatic reactions and reflect physiological aspects of a particular emotion. Essentially, Folkman and Lazarus have included the psycho-physiological aspects of emotion as part of coping that occur after the appraisal of a stressful event. This is logical and realistic since an appraised stressor will elicit immediate psycho-physiological reactions or stress outcomes. However, there is no empirical test to date on the transactional model's entire linear process with its pathways between the variables that includes stress outcomes after cognitive appraisal.

The impact of cognitive appraisal on stress outcomes has been examined extensively over the past decades (e.g. Folkman, 2008; Oatley & Johnson-Laird, 1987; Ortony, Clore & Collins, 1988; Smith & Kirby, 2001). Amongst the transactional theorists, Karasek (1979) elucidates this relationship succinctly; the experience of stress (stress outcomes) is a consequence of the interaction between the stressor (e.g. job demands) and the individual's perception of control over the stressor (e.g. job control). Later, the social dimension, namely social support, was added to the revised model of Job Demand-Control-Support (JDCS) (Johnson & Hall, 1988; Johnson, Hall & Theorell, 1989).

Theoretically, high job demand with low job control will create the stressful situation. On the other hand, high job demand with high controllability will lead to an increase of motivation, skill learning and development. Although some studies have attempted to test the buffering effect of job control (and support) in the JDC(S) model, past meta-analytical study has revealed that the strain hypothesis (demands and control/support as the additive indicators to stress) yielded more consistent support than the buffered hypothesis of the JDC(S) models. Despite numerous studies conducted with the JDC(S) model, the inconsistent empirical results have led to many criticisms (Van Der Deof & Maes, 1999).

Research evidence of stress outcomes in the form of psycho-physiological distress preceding coping behaviour is extensive in the literature (e.g. de Croon,

Blonk, de Zwart, Frings-Dresen & Broersen, 2002; Fickova, 2002; Flett, Blankstein & Obertynski, 1996; Lowe & Gayle, 2007; Moshe, 1994; Parker & Sprigg, 1999; Schaubroeck, Jones, & Xie, 2001). For example, Flett et al. (1996) found that affectivity was significantly related to coping orientation, and both Fickova (2002) and Moshe (1994) reported that affectivity (positive and negative) determines the choice of coping strategy at the time of the stressful encounter. Empirical findings that demonstrate the influence of intense emotions on the choice of coping have also been reported (e.g. Boekaerts, 2002). Although there is considerable evidence to show that coping behaviours can be influenced by stress outcomes, no empirical study is conducted to test if this relationship will remain valid within the complete transactional process as proposed by Lazarus and Folkman. This is further compounded by a lack of empirical test on the structural integrity of the basic linear sequence in the transactional process. Therefore the inclusion of another variable (i.e. stress outcomes) may alter the chronological order of the other variables, as well as the direction and number of impacts between variables within the linear sequences of the transactional process. Hence the aforementioned empirical findings on the relationships between cognitive appraisal, stress outcomes and coping behaviours remain tentative when viewed from a process perspective. Lazarus and Folkman's transactional model of stress and coping is an ideal framework to incorporate this intermediary 'stress outcomes' variable between secondary appraisal and coping. The structural integrity of this modified process can then be tested as a whole for validity.

In summary, research into Lazarus and Folkman's transactional model of stress and coping has provided a myriad of findings that reflected the complexity of influence between variables in the model. Specifically, stress outcomes can occur at a number of junctures in the model, and cognitive appraisals can influence both psycho-physiological reactions (i.e. stress outcomes) and coping options. How they will perform when tested as part of a complete transactional process remains unclear. Will

the integrity of the transactional process still hold? Will the variables in question still behave according to what previous empirical findings have claimed? Research that adopts a holistic and process approach to studying stress remains scarce, but this is precisely what is needed. Unless previous research evidence on the various parts of the stress and coping model are put together and re-examined as a whole and as a process, our understanding of this phenomenon will remain equivocal and fragmented. It is therefore the aim of this study to test two revised accounts of the transactional model (RTM1 & RTM2) in its entirety as a process that includes the intermediate stage 'stress outcomes' (Figure 2 and Figure 3).

Based on the research findings that this paper has presented on the relationships between cognitive appraisal, stress outcomes and coping, the first proposed RTM has four paths in the process (RTM1, refer to Figure 2). According to RTM1, an event perceived as threatening (PA) will trigger a secondary appraisal process (SA) to determine if there are sufficient coping resources to control or manage the stressor. It is predicted that the outcome of this appraisal will affect psycho-physiological experience, i.e. occupational stress level at Time 1 (S1). In the event of occupational stress elevations at S1, coping strategies (COP) are then triggered. On the other hand, if the stressful experience is very low or non-existent, then coping may not be activated. S1 therefore needs to be of a sufficiently distressing level to initiate coping behaviours. The consequence of these coping behaviours (COP), if activated, may be an even higher level of occupational stress outcome at Time 2 (S2), such as severe anxiety or depression, if coping is unable to resolve the stressor.

There is another alternative to the above proposed RTM. Specifically, PA and SA can influence S1 since both are cognitive appraisal processes, which have potential influence on the level of stress experienced. Furthermore, S1 can influence S2 as both are psycho-physiological stress arousals that an individual experiences across time. In other words, S2 is an extension of S1; therefore it is logical that a link

is present between S1 and S2. If the above mentioned relationships are also reflected in the RTM, it will become a six path model (RTM2, refer to Figure 3) which is more comprehensive than RTM1 but not necessarily better.

Insert Figures 1, 2 & 3 about here

The proposed RTM1 and RTM2 are based on Lazarus and Folkman's (1984) theoretical frameworks with a more comprehensive and holistic account of the stress and coping process. They offer an opportunity to re-examine and clarify some existing discrepancies and conflicting findings in amongst stress and coping research. However, both RTM1 and RTM2 have not been empirically tested; therefore this study will first test and compare the proposed RTM models with the original transactional model of stress and coping (Lazarus & Folkman, 1984). It is predicted that the RTM1 and RTM2 will be valid and provide a better fit than the original transactional model.

METHOD

Participants

A total of 156 participants with full time employment (i.e. nurses and administration employees) were recruited (respond rate of 45%). The recruitment of participants involved contacting various hospitals and academic institutions for participation. This was done via a few means; direct contact through phone calls, advertisement in the university newspaper, emails and mails. The mean age of the 49 male participants was 34 years (S.D. = 10.51) and 36 years (S.D. = 10.31) for the 80 female participants. Their education level ranged from high school (n = 42),

diploma/certificate (*n* = 16) to university degree (*n* = 109). After screening for missing data, only 129 cases provided usable information. Questionnaires were rejected when the participant did not satisfactorily complete the survey, or when they did not identify the nature of the stressful event.

Measures

Primary appraisal and secondary appraisal (Dewe, 1991).

The primary appraisal (PA) and secondary appraisal (SA) scales by Dewe (1991) assess appraisal processes of an identified potentially stressful event. The scales are based on Lazarus and Folkman's theoretical definition of the two appraisal processes. The PA scale consists of eight items thought to reflect why an event is appraised as stressful. The items are: (1) feeling that you would not achieve an important goal, (2) feeling you would lose the respect of someone important to you, (3) appearing incompetent, (4) feeling threatened, (5) feeling embarrassed, (6) appearing to be unsupportive, (7) appearing difficult to get along with, and (8) appearing to be in the wrong. Participants were asked to rate how applicable each of the above items was on a 5-point scale, (1= not at all to 5 = applies a great deal) in relation to a particular stressful work event.

The SA scale consists of six items thought to reflect how the participant would *actually* cope with the identified stressful event. The six items are: (1) an event that you could change or do something about, (2) an event that must be accepted or just get used to, (3) an event which you needed to know more about before you could act, (4) an event which you had to hold yourself back from doing what you wanted to do, (5) an event where bureaucracy made it difficult to be dealt with, and (6) an event which if you dealt with it the way you wanted to it would have made things difficult for you. Participants are to consider each of the six items and rate how much each statement

related to their specified stressful event on a five point scale, (1 = not at all to 5 = applies a great deal).

Ways of Coping Check List Revised - (WOC; Vitaliano et al., 1985).

We employed WOC to measure coping strategies used among participants. The measure consists of five categories designed to assess participants' coping strategies. The categories are: (1) Problem-Focus Coping (15 items; e.g., came up with a couple of different solutions to the problem), (2) Seek Social Support (six items; e.g., talked to someone about how I was feeling), (3) Blame Self (three items; e.g., criticised or lectured myself), (4) Wishful Thinking (eight items; e.g., hoped a miracle would happen), and (5) Avoidance (10 items; e.g., went on as if nothing had happened). Participants rate each item on a five-point scale to assess the frequency of each coping strategy (1 = not relevant to 5 = used a great deal). The WOC is a comprehensive measure that covers all the major coping categories as identified in Lazarus and Folkman's transactional theory. This study examines the overall transactional process and it is often the case that individuals who experience stress will employ different categories of coping; therefore the use of a global coping measure (total coping scores) is recommended.

Occupational Stress Inventory (Osipow & Spokane, 1987).

The Occupational Stress Inventory is designed to assess overall occupational stress levels. The full inventory contains three sub-scales, i.e. Occupational Stress (ORQ), Psychological Stress (PSQ) and Person Resource Questionnaire (PRQ). Since this study has already used the secondary appraisal scale for the measurement of one's perceived level of resources or control over the stressful event, PRQ is therefore excluded because it measures the same construct. The remaining two subscales will consequently provide a more precise measurement of the resulting stress experienced

by the participants as represented in the RTM models. The OSI can be computed as an overall score that provides a global measurement of stress at work by adding the three subscales together (Osipow & Spokane, 1987). In the present study, only PSQ and ORQ are combined to measure the overall occupational stress. The ORQ (60 items) measures an individual's global stress level, and the PSQ (40 items) evaluates the individual's psycho-physiological experience of stress. Items in ORQ include; "*I have competence in what I do*" and "*If I make a mistake in my work, the consequences for others can be pretty bad*", whereas items in PSQ include; "*My eating habits are erratic*" and "*Lately, I have been anxious*". Participants are asked to rate the extent to which the identified stressful event has affected them in general at work or has left them generally feeling at work, on a five-point scale with a score of 1 reflecting rarely or never and a score of five reflecting most of the time. High scores on both scales indicate that the level of stress experienced by the participant in his/her work environment is high and that the identified stressful event has contributed at least in part to that level of stress experienced at work. The occupational stress inventory is administered twice at Time one (measuring stress level-S1) and Time two (measuring stress level-S2) which are two to four weeks apart. The Cronbach alpha for this inventory in Time one (i.e. S1) and Time two (i.e. S2) have shown high and stable reliabilities with S1 at $\alpha = .93$, and S2 at $\alpha = .95$.

Design and Procedure

The questionnaires were mailed directly to the participants. Prior to completing the test battery, all participants provided voluntary informed consent and were ensured that their responses would remain anonymous. At Time1 participants were asked to identify a specific stressful workplace event that was likely to continue for an extended period of time. This was to ensure that the ongoing stressor would allow participants

the required time to cope with the stressor. Time 1 surveys assessed participants' primary and secondary appraisals (PA, SA) of the identified stressful event, and their current occupational stress level (S1). Participants were given a blank piece of paper to record the coping strategies used over the next few weeks to manage their identified stressor. Two to four weeks later, the Time 2 surveys were given to assess participants' coping of the identified stressful event (COP). Their paper record of the coping strategies (WOC) used would assist them in completing the coping survey. Their occupational stress level at Time 2 (S2) was also measured at this point.

By dividing the study into two sessions of two to four weeks time lag and requesting participants to record their coping strategies, a more precise and accurate assessment of the stress and coping process can be obtained. There is no standard on the length of time lag for research of this nature (De Lange, Taris, Kompier, Houtman & Bongers, 2003); however the four weeks duration has been used by previous stress researchers such as Terry (1991) to promote accuracy of recollection. Factors such as personality and later occurring events that further bias recollection are also minimised.

RESULTS

Scale Reliabilities and Correlations

The reliability statistics for the scales in this study closely resemble those reported in the original studies (Table 1). Participants' total scores for all the scales were divided by the number of items in each of the respective scales to produce an average score. Table 1 shows the variables' means, standard deviation and inter-correlations.

Insert Table 1 and Table 2 about here

Path Analysis

The structural equation-modelling program (EQS) was used to conduct path analysis for the original transactional model (model 1), RTM1 (model 2) and RTM2 (model 3). Results from model 1 showed poor fit on the sample with fit indices of χ^2 (3) = 20.566, $p < .01$, RMSEA=.21, GFI = .93, NFI = .61, CFI = .62. Only two paths in the model were significant; they were from PA to SA and from COP to S2. The analysis on model two (RTM1) also produced poor fit with χ^2 (6) = 80.246, $p < .001$, RMSEA=.31, GFI = .83, NFI = .46, CFI = .50. However, all the paths in model two were significant which was better than model one. This result suggested that the paths in model two (i.e. RTM1) were valid in the sample's stress and coping process except the model was incomplete and therefore could not fit the sample. This led to the analysis of the more comprehensive model three (RTM2). Results showed it fitted the sample with χ^2 (4) = 5.93, $p > .20$, RMSEA = .06, GFI = .98, NFI = .96 and CFI = .99. All the path estimates in this model were significant (Refer to Figure 3). Therefore RTM2 was the only significantly fit model in the present study while both the original transactional model and RTM1 failed to fit the sample.

RTM2 revealed that in addition to the basic four paths found in Lazarus and Folkman's transactional model, there was a direct link between PA and S1 and between S1 to S2. The components PA, SA, S1, COP and S2 with their chronological order and pathways remained valid. Hence Lazarus and Folkman's transactional theory was adequately represented by the revised model (RTM2).

Insert Figure 3 about here

DISCUSSION

The present study has tested the validity of the Lazarus and Folkman (1984) transactional model of stress and coping and extended the model by inserting a psycho-physiological stage between secondary appraisals (SA) and coping (COP). The rationale for this extension is to reflect previous research that showed stress outcomes as a function of one's cognitive appraisal and a precedent of one's coping behaviours. A revised transactional model of occupational stress and coping (RTM1 and RTM2) are developed and tested using path analysis on Australian data. The analyses provide clear support for the more comprehensive RTM2; in particular, the significant path estimates have shown that the chronological order of impact between the model's components (PA, SA, S1, COP, and S2) is valid. Thus, the integrity of Lazarus and Folkman's transactional theory remains intact. At the same time, past empirical evidence on the chronology of influence between cognitive appraisal, stress outcomes and coping is supported.

This study has introduced three improvements to the original transactional theory of Lazarus and Folkman. Firstly, the inclusion of a stress outcomes stage (S1) between SA and COP: The significant RTM2 and its path estimates from SA to S1 and from S1 to COP have demonstrated that the process of Lazarus and Folkman's transactional theory (i.e. the chronological order from appraisal to coping to psycho-physiological stress experience) remains intact even after S1 is inserted into the model. The second improvement that this study makes to the original transactional theory is the recognition of a path from Primary appraisal (PA) to psycho-physiological experience at Time 1 (S1). The rationale being that when one perceives an event as threatening or stressful (PA), psycho-physiological arousal (S1) will

naturally follow. The path from S1 to psycho-physiological experience after coping (S2) is the third new addition. Since psycho-physiological responses are continuous experiences in the aetiological process of stress and coping, it is therefore expected that the stressful experience after appraisal (S1) will sustain a strong and direct link with the stressful experience after coping (S2); S2 is essentially an extension of S1. This study indicates that the RTM2 has largely upheld many research findings on the transactional theory of stress and coping (e.g. Folkman, 2008; Karasek, 1979; Oatley & Johnson-Laird, 1987; Ortony, Clore & Collins, 1988; Smith & Kirby, 2001). First, cognitive appraisals of a stressful event (e.g. PA and SA) can significantly impact on an individual's psycho-physiological experience (S1). Second it provides support to the significant effects of intense emotions on a person's choice of coping strategy (e.g. Fickova, 2002; Moshe, 1994).

The present study has therefore successfully developed, modified and tested the revised transactional model for occupational stress and coping (Figure 3). This final model (RTM2) integrates some of the key transactional theories as well as other relevant research findings into a more comprehensive and cohesive framework. RTM2 shows that the aetiological process of experiencing occupational stress begins when one's cognitive appraisals are activated by a stressful encounter. Stress outcomes or S1 (e.g. negative affectivity, increased heart rate and anxiety) is triggered by both primary and secondary appraisals. This stressful psycho-physiological arousal (S1) appears to initiate coping strategies to manage the stressor, which leads to a new level of psycho-physiological stress experience (S2) based on the coping outcome and the level of S1 experienced previously. Although there is empirical support for each stage of the relationship between the stress and coping variables (e.g. Chang, 1998; Dewe, 1991; Goh & Oei, 1999; Holt, Fine, & Tollefson, 1987; Park & Adler, 2003),

the complete chronology of these stages within the process has not been examined. As noted earlier, the present study has taken up the challenge of incorporating all of the above key variables into a complete process model and then tested the structural integrity of the model in full. Through this effort, a more holistic and detailed insight of the stress and coping process is achieved.

For example, RTM2 has revealed that some components in the process act as a trigger on multiple subsequent components. Specifically after PA, both SA and S1 are activated whereas SA on its own impacts only on S1. The latter (S1) has a dual function of activating both COP and S2. Finally, COP impacts only on S2 (Figure 3). This model has also exposed the highly fluid nature of stress outcomes in the transactional process. Notably, the experience of psycho-physiological arousal (stress outcomes S1& S2) can occur at different points of the process and can be triggered by both cognitive (e.g. PA & SA) and behavioural (COP) factors.

The pathways' direction of impact in RTM2 gives a clear picture of how one variable affects the other. Specifically, when a stressor is encountered; the more threatening one appraises the stressor as (high PA), the lower one will perceive to have control over the stressor (low SA) and the higher one's stress outcomes (high S1) will be. Low SA brings about a higher level of S1, with the latter (S1) triggering an increase in frequency and/or variety of coping strategies being employed (COP). This high COP level appears to reflect desperation on the part of the individual in struggling to cope, which can result in less than satisfying resolution of the stressor. This seems to be supported in RTM2 where the stress outcomes after coping (S2), is positively determined by COP (Refer to Figures 3) such that the higher COP, the higher S2 will be. S2 is also determined by S1, which suggests that the degree of stress experienced in time 1 has an impact on S2. In addition to the specific

relationships between these variables, RTM2 has also shed light on where the potential moderating and mediating variables are in the process (e.g., potential mediation of COP and SA which has been postulated by Dewe (1991)). Using RTM2 as a guide, future research can explore and examine these potential moderating and mediating factors as well as the reasons behind the directions of influence between these variables without compromising the integrity of the process.

It is worth emphasising that the above chronological illustration of the transactional process merely reflects a cross section of an ongoing feedback cycle. The stress outcomes after coping (S2) do not imply resolution of the stressor encountered. If the coping strategies are not successful, the stressor can continue to pose as a threat to the individual, and will be re-appraised by PA and SA. Hence RTM2 represents only a cross section of a cyclical process similar to Mack, Nelson and Quick's (1998) dynamic model of stress, which proposes an ongoing system of feedback loops that form the cyclical nature of the stress and coping process. However, future research is needed to test the structural integrity of RTM2 across time in order to simulate the proposed temporal cyclical processes. This may involve more sensitive and accurate measurements as well as instruments that measure real time responses.

Measuring real time responses is highly recommended in view of the reliance that this study has placed on participants' recall of past experiences and responses. Survey study has its limitations such as errors in comprehension, recall and social desirability issues (Ayres & Wood, 1999; Schechter & Herrmann, 1997). We have employed a short time lag interval (4 weeks) to prevent telescoping and to promote the accuracy of recollection. Future study may also extend the time lag methodology and incorporate other techniques such as diary keeping and heart rate measurement.

It is worth noting that this study did not delve into the exact type of stressors and coping strategies being used because the research aim was exploratory in nature. That is to test if the revised transactional model of stress and coping can fit a selected sample first. Once it is established to be valid, then this model can be used as a template on which more specific investigations are conducted across additional samples, stressor types, methods of coping, contexts and cultures. The present study also recommended that a curvilinear model be developed for individuals with ongoing stressful encounters which will pave the way for more longitudinal studies to be conducted. Finally the interpretation of SA requires caution when utilising RTM2; although an alpha level of .64 for SA is acceptable within the present context of an exploratory study, future research is advised to use an SA measurement with better reliability.

In summary, this study has extended the original transactional model which shows how individuals appraise, cope and experience occupational stress. It provides an update on Lazarus and Folkman's (1984) transactional theory of stress and coping by incorporating other empirical findings in this research field that demonstrated the dynamic and mutable nature of psycho-physiological stress experience and the cognitive appraisal processes. The thrust of future stress and coping research lies in the adoption of a more holistic or systems based approach, which many progressive researchers (e.g. Cooper, Dewe, & O'Driscoll, 2001) have advocated. This in turn will have significant implications on the current design and development of stress management programs, which often lack the required comprehensiveness and sensitivity to ensure long-term effectiveness and adaptability. This is partly because today's stress management programs are often not driven by sound theoretical models but instead by the needs of managers to lower employee's stress level in the

organisation (Gardner, Rose, Mason, Tyler & Cushway, 2005). However in the face of modern workplace environment, the ability of a stress management program to adjust to a myriad of interplay between socio-political, environmental, cultural, organisational and individual factors is paramount. This means present day stress management programs need to be grounded by theoretical frameworks that are dynamic and process oriented; and are capable of adapting to and incorporating various contextual influences. The RTM2 is such a prototype that will provide the impetus towards a more cross-contextually and complete insight into the workings of stress and stress management under a rapidly changing and globalized 21st century workplace.

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Figure 1. Lazarus and Folkman's (1984) basic model for stress and coping processes when a stressor is encountered.

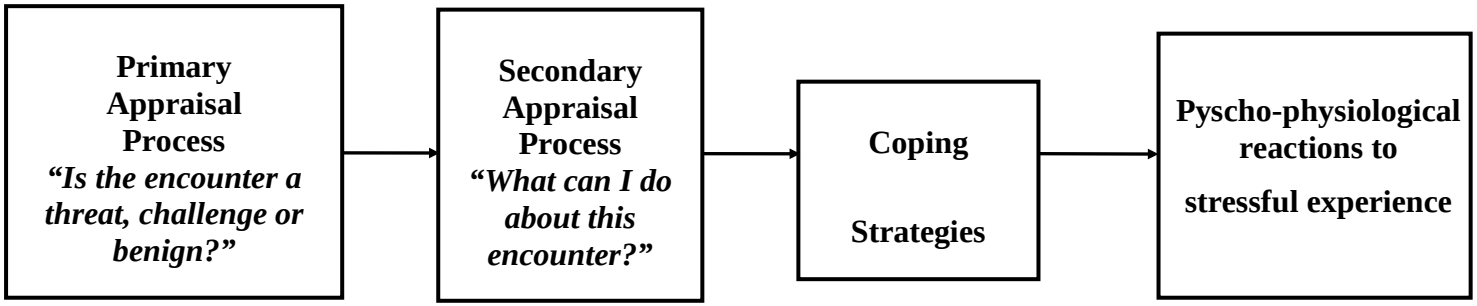

Figure 2. The 4-path Revised Transactional Model of Occupational Stress and Coping-RTM1 (estimates from standardised solution, * = p < 0.05)

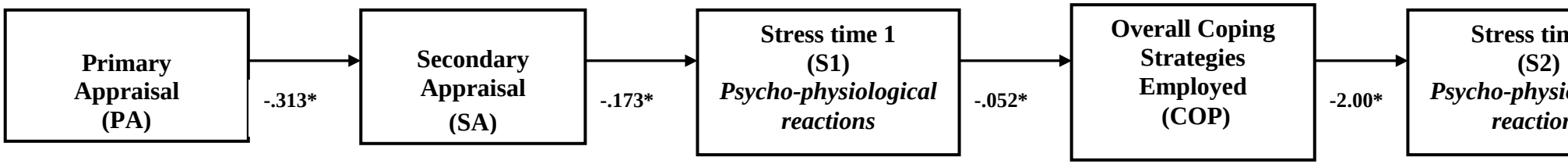

Figure 3. The 6-path Revised Transactional Model of Occupational Stress and Coping-RTM2 (estimates from standardised solution, * = p < 0.05)

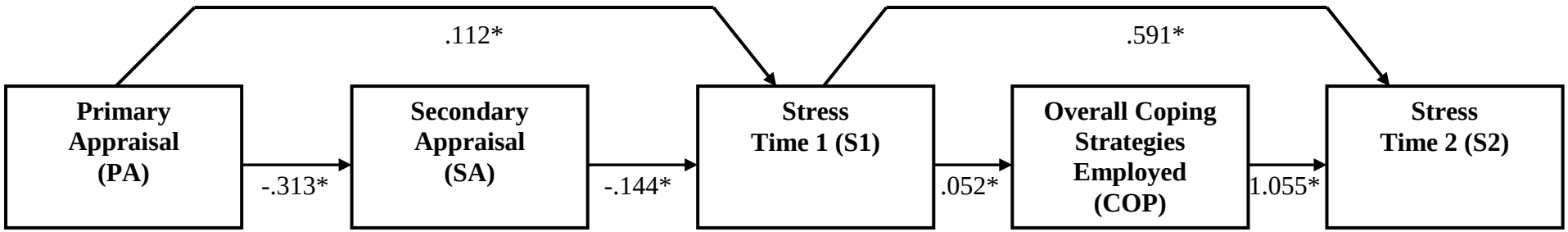

Table 1. Alpha coefficients reported in the original studies versus the current study sample

Scales	*Alpha from the original study*	*Alpha from this study*
OSI	.91	.93 (T1); .95(T2)
Primary Appraisal	.69	.75
Secondary Appraisal	.73	.64
Total score of coping	.80	.87

Table 2. Means, Standard Deviations and Correlation (** $p \leq 0.001$, 2-tailed)

Variables	*1*	*2*	*3*	*4*	*Mean*	*SD*
1. Primary Appraisal					2.44	.79
2. Secondary Appraisal	-.29**				2.98	.66
3. S1(stress level at time 1)	.36**	-.43**			2.28	.50
4. Total score of coping	.29**	-.11	.29**		2.55	.51
5. S2(stress level at time 2)	.30**	-.27**	.67**	.37**	2.30	.38