Running Head: STRESS AND COPING

Emergency Reaction: Self-Efficacy and Problem-Focused Coping in Stressful Situations

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Abstract

In stressful situations people with high self-efficacy tend to use effective coping strategies (i.e., problem-focused coping). Persons who cope effectively with stress report fewer health problems. In high stress emergency situations, in which the general public has difficulty coping, emergency service personnel (EMS) are able to work effectively and this is likely due to the use of positive coping strategies (i.e., problem-focused) and high levels of self-efficacy. In this study, university students participated as a representation of the general public and their reactions to stressful situations were compared to the reactions of EMS personnel. In emergency and non-emergency situations EMS personnel and students reported similar positive coping reactions. Even though university students do not frequently experience high stress emergency situations they do cope with stress on a daily basis. This indicates that the ability to cope effectively with stress in general, enables a person to cope effectively in unfamiliar high stress emergency situations. All participants reported few stress related health problems and high levels of self-efficacy along with frequent use of problem-focused coping. This demonstrates the combination of self-efficacy and problem-focused coping is beneficial for coping with stress in a healthy way.

Emergency Reaction: Self-Efficacy and Problem-Focused Coping in Stressful Situations

Stress is defined as the way people assess and cope with environmental threats and challenges (Myers, 2004). Everyone experiences stress and often it is a daily occurrence. Though stress can be a beneficial motivator, too much stress is unpleasant (Straub, 2002). Traumatic experiences or chronic stressful experiences have a negative impact on one's physical and mental health. Some personality types experience higher levels of stress then others. This indicates that stress is influenced by both the environment and genetics.

Stress is often measured using self-reports (Straub, 2002). This is because physiological measures are expensive and the equipment is difficult to move thus the experiment must occur in a laboratory setting, which could cause the participant to feel anxious. When using physiological measures, guilt, stress and anxiety all look the same (Straub, 2002). To avoid these confounding variables (i.e., anxiety due to lab) self-reports are commonly used and are developed by conclusions drawn from stress models. Different models have been created to demonstrate how people deal with stress. Selye (1974) developed the idea of a general adaptation syndrome that consists of three stages of the body's reaction in response to stress: alarm, resistance and exhaustion. Some evidence suggests that the body's stress response is nearly the same, whether a situation is actually experienced or imagined (Lazarus, 1966).

Another point of view on stress is Lazarus's (1993; Lazarus & Launier, 1978) transactional model. The primary appraisal is the first phase, where the meaning of the event is interpreted as irrelevant or threatening. If the event is appraised as a threat the

individual makes a secondary appraisal. At this phase one determines whether his or her resources and abilities are able to meet the demands of the event. Then the person exhibits a coping response and through thought processes determines his or her success or failure in dealing with the challenge. This is termed cognitive reappraisal (Lazarus & Alfert, 1964).

It is important to mention that not all stress is bad; in fact some stress is a good motivator. The optimum level of arousal hypothesis suggests there is an optimum level of arousal (stress) where behaviour and cognition are at its best (Hebb, 1955). The concept of this hypothesis is that low levels of stress result in limited motivation to perform well. However, too much stress causes one to panic and perform poorly. Thus, there needs to be a balance of just enough stress leading to motivation and good performance.

Stress is caused by potential threats and challenges called stressors (Myers, 2004). Sources of stress include environmental stress, job-related stress, sociocultural factors, poverty and inequality (Straub, 2002). Significant life changes (i.e., leaving home, death of family member, job loss, divorce etc.) perceived as stressful can lead to a weakening of the immune system thus leading one to be more vulnerable to illness including disease (Myers, 2004; Straub, 2002).

A particular event may be stressful to some but not to others. Thus, the level of stress from a given situation has more to do with ones perception of the threat or challenge of that situation, than the particular event (Florio, Donnelly, & Zevon, 1998; Glass, McKnight, & Valdimarsdottir, 1993; Brough, 2004; & Fillion, Tremblay, Truchon, Côté, Struthers, & Dupuis, 2007). The more serious the stress is perceived to be or the greater the amount of stress, the lower ones physical and psychological wellness

(Lazarus, 1998; Ruffin, 1993). Chronic or severe stressful situations can have detrimental impacts on an individual's mental and physical health (Ruffin, 1993). Daily hassles may be the most significant source of stress (Straub, 2002). Frequent daily hassles have a negative impact on ones psychological health (i.e., high blood pressure and heart disease, Myers, 2004; Baron, Byrne, & Branscombe, 2006).

People do have the ability to cope with temporary stress, but prolonged stress can cause physical deterioration (Myers, 2004). Research on prolonged stressful experience has found that many subjects have difficulty with explicit memory due to a shrunken hippocampus caused by flooding of stress hormones (Sapolsky, 1999). Post-traumatic stress can lead to increased rates of circulatory, digestive, respiratory and infectious diseases (Boscarino, 1997). Unpredictable stress inducing events result in an increase in psychological disorders such as depression and anxiety (Rubonis & Bickman, 1991). Another possible affect of stress is psychophysiological illness (i.e. hypertension and headaches, Light, Koepke, Obrist, & Willis, 1983).

Often when stressed, people feel tense, irritable, and unable to concentrate (Straub, 2002). Thus, when stressed an individual experiences tunnel vision and is narrowly focused. The individual becomes less socially aware and this could be bad for teamwork because the individual focuses on meeting his or her own immediate needs and does not attend to others.

In summary, stress is a term used to explain how people assess and cope with environmental threats and challenges (Myers, 2004) and is often measured using self-reports (Straub, 2002). Different models have been created to demonstrate the way in which people deal with stress (i.e., general adaptation syndrome, transactional model, and

optimum level of arousal hypothesis). Some evidence suggests that the body's stress response is nearly the same, whether a situation is actually experienced or imagined (Lazarus, 1966). Some stress is a good motivator but too much stress is harmful to ones health. Therefore, a good balance of stress is beneficial. The stressfulness of an event often depends on ones perception thus a particular event may be stressful to some and not others. During and after stressful events people rely on coping strategies (Straub, 2002). Certain coping strategies are more beneficial then others for dealing with stress in a healthy manner (Baron et al., 2006).

There are a variety of ways in which people cope with stress. The three most beneficial are social support, emotion-focused coping and problem-focused coping (Baron et al., 2006). Social support is seeking emotional and task resources provided by friends, family and even pets. Emotion-focused coping is trying to look at the stressful situation in a positive way (i.e., lead to personal growth, will make you a stronger person) or recalling all the good things in life. Problem-focused coping is an effort to alter the cause of stress by changing or removing the stressor and solving the existing problem. Problem-focused coping is probably the most beneficial strategy (Baron et al., 2006). However, if stress cannot be eliminated by problem-focused coping one may use emotion focused coping to tolerate stress.

Self-care through positive coping strategies is very important for good health (Baron et al., 2006). Positive mood is a beneficial way to cope with stress and improve health. A way to put one's self in a positive mood is by helping others (Brown, Nesse, Vinokur, & Smith, 2003). If someone is having a stressful day and he or she does an act of kindness he or she will be in a better mood and his or her stress level will decrease.

Self-care by eating healthy and improving ones physical fitness is a beneficial way to help in coping with stress (Brown, 1991).

When responding to stress certain ways are more beneficial then others. These are: knowing what to expect, expressing feelings, keeping things in perspective, and avoiding self defeating thoughts and over reactions (Straub, 2002). Other positive ways of coping with stress are relaxation, biofeedback and relaxation, healthy behaviour, and thinking positive (Myers, 2004). Negative ways of coping can harm ones health. Some negative coping strategies are: suppressing traumas, emotional distance (Regehr, Goldberg, & Hughes, 2002), dissociation (Weiss, Marmar, Metzler, & Ronfeldt, 1995), apathy, withdrawal, and catharsis (Florio et al., 1998). Gender differences have been found with the use of coping strategies. Women are more likely to use a variety of coping strategies to deal with stress, where men are more likely to use avoidance as a coping strategy (Baron et al, 2006).

Positive coping strategies are very important for self-care and as a result good health. Problem-focused coping, making an effort to alter the cause of stress, is likely the most beneficial coping strategy. Some positive strategies are helping others, thinking positive and keeping things in perspective. People who have high levels of self-efficacy often choose beneficial coping strategies (i.e. emotion-focused coping, problem-focused coping, and social support, Bandura, 1997).

Self-Efficacy is the exercise of control; believing that through one's own actions he or she can attain a goal (Bandura, 1997; Baron et al., 2006). A person's sense of control influences the way he or she copes with stress (Bandura, 1997). Stress is not always reduced if one believes they have control over the situation and the outcome is not

always beneficial (Folkman, 1984). Determining an event to be uncontrollable does not always lead to greater stress or bad outcomes. If a person believes he or she has control when he or she does not, his or her stress level is likely to increase. People who attribute circumstances to an external-locus of control think that all factors are uncontrollable and any good is due to fate or luck (Straub, 2002). When an individual believes he or she has lost control in his or her life, this person is more likely to have poor mental and physical health and is at an increased risk for severe ulcers (Myers, 2002). People with an internal locus of control believe that they make their own decisions and determine what they do (i.e., her or his behaviour affects an outcome). These people are more likely to choose healthier coping strategies (Folkman, 1984) including problem-focused coping (Solomon, Mikulincer, & Avitzur, 1988).

Bandura (1997) refers to self-efficacy as the exercise of control. Therefore it is similar to the definition of internal locus of control and one can presume high self-efficacy will result in the use of problem-focused coping as well. When dealing with stressful events self-efficacy is found to be beneficial for maintaining good health. Studies with animals have shown that not having control in a situation causes an overflow of stress hormones, which in turn weakens the immune system and causes health problems (Bandura, 1991). A perceived sense of efficacy to control situations affects how frequently one will experience stress and how severe they determine a stressor to be. An individual with a strong sense of control will experience stress to a lesser degree (Bandura, 1988). Belief in one's own coping efficacy greatly determines stress reactions. If an individual does not think he or she has the coping resources to deal with an event it becomes highly stressful. However, in most events people can change at least some part

of it. A sense of efficacy often determines whether or not a person will try to change the situation.

Sense of control (i.e., self-efficacy) influences the way in which one copes with stress. People who feel as though they are in control and are responsible for what occurs in their lives are often healthier and experience less stress than those that do not feel in control.

Certain lifestyles and careers result in a great amount of stress. When studying self-efficacy and coping a group of particular interest is Emergency service personnel (EMS) because EMS personnel experience high levels of stress frequently and have to cope effectively in order to work at an optimal level (Weiss et al., 1995). The main purpose of the study is to examine the potential relationship between self-efficacy and the use of problem-focused coping in emergency situations.

Based on information gathered from the literature review hypotheses were made. People with high levels of Self-efficacy will be more likely to use problem-focused coping. In emergency situations EMS personnel will have higher levels of self-efficacy and be more likely to use problem-focused coping. Self-efficacy and problem-focused coping will result in few stress related health problems. For example if a paramedic uses problem-focused coping and has few health problems it is likely his/her coping strategy is beneficial.

In other words, differences in response between EMS workers and the general public (i.e., university students) were compared to determine variation in experience of stress levels, use of coping strategies, and levels of self-efficacy between each group. Two different stress scenarios were used; an emergency scenario was to elicit higher

levels of stress than a non-emergency scenario. The two different scenarios were used to compare the stress reactions, coping strategies and levels of self-efficacy each elicited. This will indicate whether self-efficacy is an important factor in remaining calm and in control to deal effectively with high stress emergency situations. The findings will reveal if a person with high self-efficacy and use of problem-focused coping in one situation will demonstrate high self-efficacy and use of problem-focused coping in another situation. The impact of self-efficacy and problem-focused coping on health will also be determined.

Methods

Participants

Thirty-three EMS personnel, nurses from St. Josephs General Hospital and Paramedics from the Ambulance Service in Elliot Lake, participated on a voluntary basis. Thirty-six students from Algoma University participated on a voluntary basis (some received course credit) and are used as a comparison group. All participants were recruited in January 2008.

Materials

An emergency and non-emergency scenario (see Appendices A & B) was used to examine differences in stress levels and coping strategies. A Stress Appraisal Measure (SAM, Peacock & Wong, 1990) looks at perceived level of threat, and challenge of a scenario, and has factors that measure coping resources (i.e. personal control). The purpose was to determine perceived stress and coping based on emergency or non-emergency situation. The Coping Self-Efficacy Scale (CSES, Chesney et al., 2006) was used to determine the use and effect of self-efficacy and coping strategies (problem

focused coping, emotion focused coping and social support). The Stress and Health Scale (SHS, developed from a list of stress-related health problems in Straub, 2002) was to determine whether participants experienced stress related health problems.

Procedure

Students and EMS were randomly assigned to one of two groups: an emergency group (car crash scenario) or a non-emergency group (speeding ticket scenario). Participants were each given an envelope containing a consent form, instructions, personal data sheet, one of the two scenarios (emergency or non-emergency) along with each of the scales (SAM, CSES, and SHS).

The instructions asked participants to read and sign the consent form and then to complete all questionnaires/scales in the envelope according to the specified order (all pages were numbered 1 to 7). At the top of the page for each scenario (either emergency or non-emergency) were instructions stating: Please imagine yourself in the following scenario. Picture the scenario in your mind as if it were a real event happening to you. Then with the scenario in mind "*respond to the following questions according to how you view the situation right NOW. Please answer ALL questions. Answer each question by writing the appropriate number on the line, according to the following scale 1 = not at all…5 = extremely*" (Peacock & Wong, 1990). For CSES the scale was; *0 = cannot do at all…10 = certain can do*. For the SHS the scale was; *0 = never / rarely experience the health problem.…5 = frequently experience the health problem.* Once the participants completed the package they were debriefed. All participants were treated in accordance with the ethical guidelines of the Canadian Psychological Association.

Results

Data from the measures (i.e., SAM, CSES, SHS) was collected and analyzed to interpret the results. A manipulation check was done to confirm that the emergency scenario was rated more stressful than the non-emergency scenario. An independent samples T-Test (see Table 1) was used and the findings indicated that the emergency scenario was rated more stressful than the non-emergency scenario, the means are significantly different at $F = .850$, $p = .05$ (95% confidence level).

The literature reviewed indicated there are variations in coping strategies depending on gender. Using one-way analysis of variance (ANOVA) potential gender differences were analyzed (see Tables 2 & 3). For EMS workers $p = .888$ and for university students $p = .706$, therefore no significant gender difference were found in either group (EMS and students).

It was hypothesized that in the emergency scenario EMS workers would report higher levels of self-efficacy and more frequent use of problem-focused coping when compared to university students. To test this prediction a one-way ANOVA (see Table 4) was used. The ANOVA indicated that there was no significant difference between groups ($p = .054$), both EMS and university students responded similarly to the emergency scenario (see Figure 1).

Pearson product (r) correlation was used to test the hypothesis that high levels of self-efficacy would relate to frequent use of problem-focused coping (see Table 5). The correlation indicates that there is a strong positive correlation between self-efficacy and problem-focused coping. As levels of self-efficacy increase use of problem focused coping increases (see Figure 2). The result is significant at the 0.01 level (2-tailed).

Pearson product (r) correlation was also used to determine the relationship between self-efficacy; problem-focused coping and health (see Table 6). The correlation was significant at the 0.01 level (2-tailed). This indicates a strong correlation between self-efficacy, problem-focused coping and health. High levels of self-efficacy and frequent use of problem-focused coping resulted in fewer health problems.

Discussion

Past research has found gender differences with the use of coping strategies (Baron et al., 2006). However, there was no gender difference found in this study as all participants reported similar reactions to potentially stressful situations. The literature reviewed indicated that people with high levels of self-efficacy are more likely to use positive coping strategies (Bandura, 1988; Folkman, 1984). The most beneficial coping strategy is problem-focused coping (Baron et al., 2006). People who have high levels of self-efficacy and use positive coping strategies are generally healthier than those who do not (Bandura, 1997; Baron et al., 2006). Therefore, I hypothesized that people with higher levels of self-efficacy would be more likely to use problem-focused coping. The results indicate this is true, people with high levels of self-efficacy are more likely to use problem-focused coping. Correlations indicated a strong relationship between self-efficacy, problem-focused coping and health. Thus, higher levels of self-efficacy and frequent use of problem-focused coping result in few stress related health problems.

Past research indicated that EMS workers experience high levels of stress that the general public rarely experiences (Weiss et al., 1995). Due to the frequent experience of high stress emergency situations EMS personnel have to cope effectively in order to work at an optimal level. Based on this information I predicted that, compared to university

students, EMS workers would report higher levels of self-efficacy and would be more likely to use problem-focused coping in emergency situations. However, EMS personnel did not report higher levels of self-efficacy and greater use of problem-focused coping in the emergency situation than university students. Both groups responded similarly and all participants reported high levels of self-efficacy and frequent use of problem-focused coping.

A possible explanation for the similar responses of each group is that though students do not experience the same type of stress from an emergency situation that EMS workers do, students still experience stress frequently and thus have learned to use effective coping strategies. This indicates that being able to cope effectively with stress in general enables people to cope effectively with stress in unfamiliar high stress situations (i.e., emergency situations).

University students may not have been the best group for comparison to EMS workers as people in university cope with high levels of stress and may be educated on or have experience in emergency situations. I suggest that further research is done on this topic using a better representation of the general public in comparison to EMS personnel to determine if the general public does in fact cope effectively (i.e., high levels of self-efficacy and use of problem-focused coping) in high stress emergency situations.

Previous research has indicated that certain personality types experience higher levels of stress than others (Straub, 2002). Therefore another possibility is that all of the participants in this study had similar personality types. It would be of interest for future research to determine if personality type plays a role in levels of self-efficacy and use of problem-focused coping in emergency situations.

This study has further demonstrated the benefits of self-efficacy for maintaining good health when deal with stress. A new component has been added to knowledge on effective coping as this study found problem-focused coping and self-efficacy together is of greater significance for maintaining good health when coping with stress than either is alone.

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Appendices

Appendix A · Personal Data
Scenario 1 (Emergency)

Appendix B · Scenario 2 (Non-emergency)

Appendix A: Emergency Scenario

Occupation (i.e. student) (please print):

Number of years in occupation (i.e. as a university student):

Gender (please circle): *Female* *Male*

Please imagine yourself in the following scenario. Picture the scenario in your mind as if it were a real event happening to you.

Scenario

It is midnight on a Sunday evening and you are listening to your music as you drive home in your car. There is no traffic on the road and you are getting tired as you head around the corner and start up the hill. You turn up the music to keep yourself awake. Almost at the top of the hill you notice a car just ahead on your right is off the road, as you get closer you realize it is facing the wrong way (toward you) and the drivers side is bent against a telephone pole however you do not see anyone in the vehicle. You drive up beside the car and break to a stop as you stare through your passenger door window to get a closer look. You notice someone is hunched over in the driver's side of the vehicle. No one else is around and you know you cannot just drive away. You park your car and quickly get out and rush over to the crashed vehicle. There is no way to get in the drivers side because it is against a pole, so you try to open both doors on the passenger's side but they are locked. You look in the window of the car and see the person's face is covered in blood and appears unconscious.

Appendix B: Non-emergency Scenario

Occupation (i.e. student) (please print):

Number of years in occupation (i.e. as a university student):

Gender (please circle): *Female* *Male*

Please imagine yourself in the following scenario. Picture the scenario in your mind as if it were a real event happening to you.

Scenario

It is Monday afternoon and you arrive at home after a busy morning. You just step into your house when you realize you should check your mailbox. You open the door and glance over at your mailbox and notice it is full, so you get the mail and go back inside. As you are looking through the mail you find an envelope addressed to you. You notice the letter is government issued; curiously you open the envelope and begin to read the letter enclosed. The letter states that you were caught on camera in a speed trap while you were driving 65 km/h in a 50 km/h zone; you now have the option to pay a $50.00 fine or write a driving test. The letter gives you a number to call if you have any questions or to schedule an appointment if you choose to write the driving test.

Tables and Figures

Table 1

T-Test: Emergency scenario vs. non-emergency scenario

Group Statistics

Group Scenario	N	Mean	Std. Deviation	Std. Error Mean
Total stress				
Emergency	36	3.0903	.85179	.14196
Non-emergency	34	2.1029	.76900	.13188

Independent Samples Test

	Levene's Test for Equality of Variances		T-test for Equality of Means		
	F	Sig.	t	df	Sig. (2-tailed)
Total stress					
Equal variances assumed	.850	.360	5.080	68	.000
Equal variances not assumed			5.095	67.868	.000

Means are significantly different at p = .05 (95% confidence level).

Table 2

EMS Gender

ANOVA

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	.005	1	.005	.021	.888
Within Groups	4.350	17	.256		
Total	4.355	18			

Table 3

Student Gender

ANOVA

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	.085	1	.085	.148	.706
Within Groups	9.224	16	.576		
Total	9.309	17			

Table 4

Levels of self-efficacy and problem-focused coping between groups (EMS and Students)

ANOVA

		Sum of Squares	df	Mean Square	F	Sig.
Self-efficacy	Between Groups	25.000	1	25.000	3.986	.054
	Within Groups	213.222	34	6.271		
	Total	238.222	35			
Problem-focused coping	Between Groups	1848.142	1	1848.142	9.926	.003
	Within Groups	6144.029	33	186.183		
	Total	7992.171	34			

Figure 1

The bar graph illustrates total self-efficacy levels and use of problem focused-coping per group in the emergency scenario.

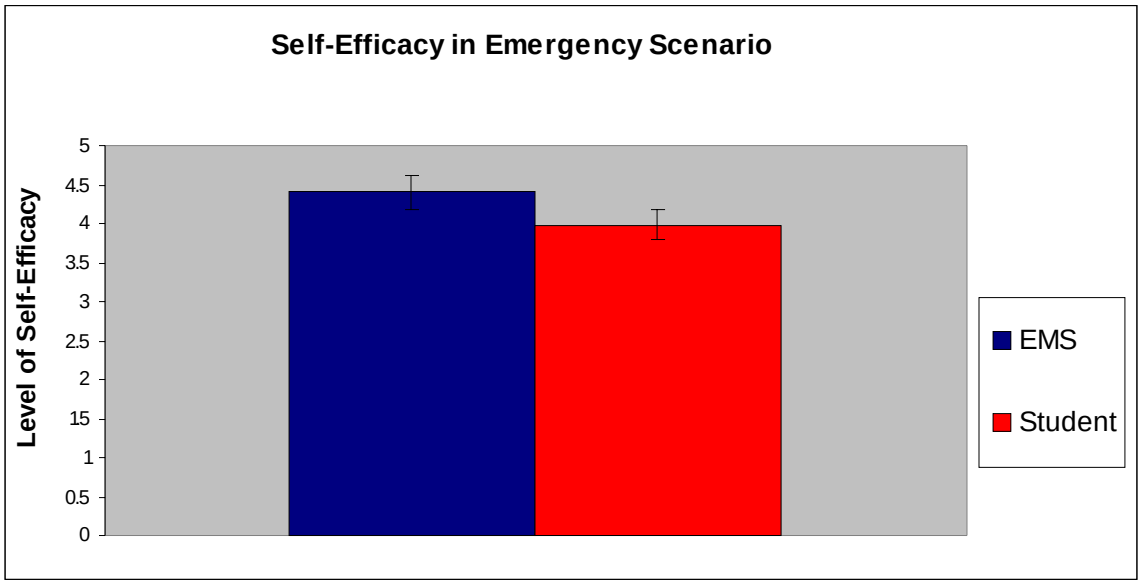
Self-Efficacy in Emergency Scenario
Level of Self-Efficacy
5
4.5
4
3.5
3
2.5
2
15
1
0.5
0
EMS
Student

Table 5

Correlation problem-focused coping and self-efficacy
Strong positive correlation

		Self-efficacy	Problem-focused coping
Self-efficacy	Pearson Correlation	1.000	.470**
	Sig. (2-tailed)		.000
	N	71.000	70
Problem-focused coping	Pearson Correlation	.470**	1.000
	Sig. (2-tailed)	.000	
	N	70	70.000

***. Correlation is significant at the 0.01 level (2-tailed).*

Figure 2

Self-efficacy and problem-focused coping have a strong positive correlation that is illustrated by the scatter plot and regression line.

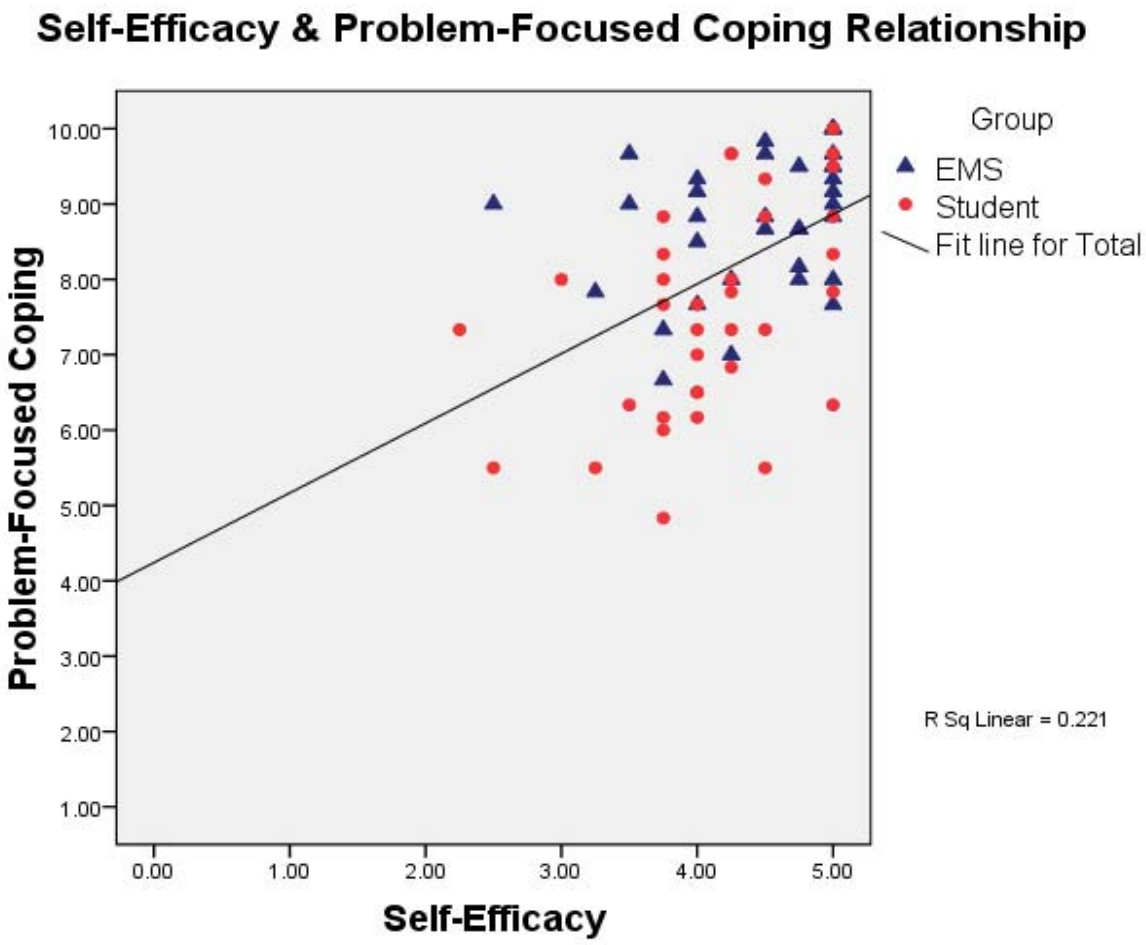
Self-Efficacy & Problem-Focused Coping Relationship
Problem-Focused Coping
10.00
9.00
8.00
7.00
6.00
5.00
4.00
3.00
2.00
1.00
0.00
1.00
2.00
3.00
4.00
5.00
Self-Efficacy
Group
EMS
Student
Fit line for Total
R Sq Linear = 0.221

Table 6

Correlations of self-efficacy problem-focused coping and health

		Health	Self-efficacy	Problem-focused coping
Health	Pearson Correlation	1.000	-.161	-.370**
	Sig. (2-tailed)		.180	.002
	N	71.000	71	70
Self-efficacy	Pearson Correlation	-.161	1.000	.470**
	Sig. (2-tailed)	.180		.000
	N	71	71.000	70
Problem-focused coping	Pearson Correlation	-.370**	.470**	1.000
	Sig. (2-tailed)	.002	.000	
	N	70	70	70.000

***. Correlation is significant at the 0.01 level (2-tailed).*