

IRRATIONAL BELIEFS AND THOUGHT CONTROL STRATEGIES AS PREDICTORS OF PSYCHOLOGICAL STRESS IN A SAMPLE OF KINDERGARTEN SECTION STUDENTS AT PRINCE SATTAM UNIVERSITY

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Abstract

Purpose of the study: This study aimed to investigate the possibility of predicting psychological stress through both irrational beliefs and thought control strategies.

Methodology: This study relied on a predictive-qualitative approach, under which the following psychometric measures were applied administered to a sample of 200 university students selected by the stratified random method: (1) Perceived stress scale (PSS), (2) Metacognitive beliefs Questionnaire (MCQ), and (3) thought control strategies scale (TCQ) on a sample of (200) university students, chosen by the stratified random method, and the researchers used a number of statistical methods such as correlation coefficient, multiple regression analysis, and path analysis.

Main Findings: The results of the study revealed the possibility of predicting perceived Stress through the following Metacognitive beliefs, and also revealed the possibility of predicting perceived Stresses through the following thought control strategies.

Applications of this study: Results concluded from the study may be beneficial to centers and units of psychological and academic counseling at universities, especially in terms of providing effective, preventive, and curative counseling services that focus on the real causes behind the spread of psychological stress.

Novelty/Originality of this study: The study presented a structural model that identifies the pathways that characterize the relationship between perceived stress and the strategies of controlling thought and metacognitive beliefs.

Keywords: *Irrational Beliefs, Thought Control Strategies, Perceived Stress, Metacognition.*

INTRODUCTION

Mental health problems are among the top ten causes of disability, low quality of life, and low productivity in Australia (Stallman, 2008). If the teacher is viewed as the cornerstone of the educational process, s/he must enjoy a good mental and physical health and hence develop an integrated and balanced personality that reflects an acceptable level of satisfaction with life, as since his/her actions and attitudes towards life are directly transferred to his/her students. A teacher's life includes many psychological stresses imposed by his/her profession, including the difficulties and challenges that affect both psychological and physical health (Quraysh, 2017).

In this regard, (Wells (2009) states that each of us possesses negative thoughts, in the same way, that she believes in the truthfulness and validity of those thoughts and ideas, not all of us suffer from persistent anxiety or emotional disturbance as a result, and subsequently, some question arise what is the mechanism that governs these ideas, and what determines the ability of an individual to expel or dispose of them? and what makes others experience frustration, distress, and extreme stress? Psychological stress is considered a decisive factor in the emergence, pathway and exacerbation of the various disorders, such as: depression, cardiovascular disease and immune-related disorders, and it is also associated with a high overall death rate. Generally, perceived stresses are associated with decreased life satisfaction.

Psychological stress is a growing problem among university students in many countries, and its prevalence among university students in Canada has been reported at 30% (35% female, 24% male). In various studies, the prevalence of psychological stress ranged between first-year students to 21% (23% female, 16% male), and in Norway, the percentage ranged to 26% (33% female, 16% male), and in France, it reached 34%, and in Canada, 26% of university students report stress (Okasanen; Laimi; Bjorklund; Loytyniemi & Kunttu, 2017).

Stress is part of the lives of individuals and societies due to the many challenges and the demands of the current era. There is hardly a society without stress, as it has become difficult to avoid or ignore it, which leads the majority of people to confront it and try to coexist with it. Stress might negatively influence Job performance, resulting in reduced productivity and lower quality of life (Khleifat & Zghoul, 2003). The teaching profession is considered one of the most stressful professions as it requires performing many tasks, .Therefore, it is sources of psychological pressure, and

consequently, teachers feel dissatisfied with their profession, which has many negative effects on their overall teaching performance and academic production, their giving, psychological fitness and compatibility as well as their life and satisfaction (Quraye', 2017).

Psychological stress occurs when an individual perceives environmental requirements as exceeding his/her ability to adapt. Thus, stressful events are generally thought to influence the genesis of an organism by causing negative emotions (e.g., feelings of anxiety and depression) which in turn lead to direct effects on the biological processes or behavioural factors that lead to the risk of disease (Cohen, Lanicki & Miller, 2007). It is painful when negative thoughts intrude on the individual's feelings, whether in the form of doubts about the personal value and self-worth when they are in the form of worries about the future, or concerns of the past. Such thoughts may undermine an individual's sense of happiness and support his negative mood. Fortunately, most people seem to be able to replace their unwanted thoughts with more desirable and attractive ideas. However, it does not seem that everyone is able to demonstrate their ability to rationally control their thoughts, because there are certainly not a few people who are depressed for long periods, who live and suffer from persistent negative thoughts, and the reason may be that their depression is caused by a specific deficit in their ability to control their negative thoughts (Wenzlaff, 1998).

Some thought control strategies are considered inappropriate strategies because they are not always effective in stopping or getting rid of unwanted ideas. In every emotional case, persistence in addressing the threat occurs through some cynical organization strategies that rely on discordant processes. Some coping behaviors, such as avoiding and organizing emotion and knowledge, act as are a problem, as they deprive the individual of opportunities to discover the extent of his/her ability to confront in actual situations, as well as reinforce his sense of danger, and prevent him/her from testing the reliability of these negative beliefs and ideas. Metacognitive beliefs have the main effect on the way in which an individual responds to negative thoughts, beliefs, symptoms, and emotions: they are the driving force behind the Toxic thinking style and referred to as Cognitive Attentional Syndrome (CAS) that leads to Continuous emotional distress (Wells, 2009). Metacognition is known as a multifaceted concept, which includes knowledge, processes, and strategies that establish, monitor, or control knowledge (Foumany; Salehi & Faei, 2014).

Female university students face multiple and diverse psychological stresses depending on the source of stress, which may be a real or imaginary reality from the way many students think and perceive events. Sources of stress may be economic, social, or cultural and they affect the aspects of the student's personality. Thus, stress might be evident in and are reflected in a student's academic performance and relationship with her colleagues and with parts of the body. Through the work of one of the researchers (2nd author) as a member of the psychological counseling unit in the college, she has noticed that there are stresses that are difficult to face and handle properly, as it they exacerbate and nurtures themselves and become worse affect significantly the performance of students and both their physical and mental health.

What motivated the researchers to conduct this study is the fact that kindergarten teachers suffer from severe stress while working with children. This is mainly due to the child environments and cultures which vary considerably as well as their and personalities, which distinctly differ. Besides, among them, there may be children who suffer from behavioral and psychological disorders and/or problems. Some of these disorders might not have been identified yet, such as hyperactivity, mental disability, and learning difficulties. Moreover, these stresses, which all of us are likely to face at work in different aspects of all our lives, maybe increased and fueled by irrational beliefs, negative metacognitive beliefs, and non-adaptive thought control strategies that might keep and sustain them.

Therefore, the current research problem can be formulated in the following question: Is it possible to predict the Perceived Psychological stress of kindergarten-section students through their metacognitive beliefs and thought-control strategies that they use? The previous main question is branched into the following minor questions:

Research Question 1- Is it possible to predict the perceived psychological stress of the research sample through metacognitive beliefs?

Research Question 2- Is it possible to predict the perceived psychological stress among the study sample through thought control strategies?

Research Question 3- What is the path of the relationship between perceived psychological stress on one hand, and both metacognitive beliefs and thought-control strategies on the other?

LITERATURE REVIEW

Theories that explain psychological stress encountered by people are numerous and varied:- some of them view stress as an exciter (i.e.an independent variable), and while others see stress as a response or reaction (i.e. dependent variable), and some other theories stand in the middle position viewing stress as an intermediate variable located between stimulus and response:- that is, they study stress in the light of both tribal and dimensional factors (Fayyad, 2002)

Stress is a global concept in the sense that it is possible for all people whether young or old to face stress in their lives (Yildiz, Baytemir & Demirtas, 2018; Lazarus & Folkman, 1984). Lazarus and Folkman have defined perceptions as the extent to which an individual experiences events in life through his/her personal view of them as being unpredictable, uncontrollable, excessive. Bank, Slavings, and Biddle (1990) argues that the life of a college student cannot be separated

from contemporary pressures, issues, and challenges. Teachers are subjected to varying degrees of professional psychological stress, subsequently feel that their work efforts are ineffective and insufficient to satisfy their need for appreciation, achievement, and self-realization.

The motivation behind the stress exerted positively may be to influence the individual to stimulate and mobilize the maximum of his capabilities (Ellis & Wildle). However, if the stress level exceeds a certain limit where the individual can no longer control it, this may cause him/her to suffer from psychological, physical, or physiological problems (Roams & Sharma, 2004). In light of the theory of rational emotive behavioral therapy (REBT), the stress of individuals is often related to the system of irrational beliefs they believe in toward the events they are experiencing (Ellis, 2002). In other words, stress arises from an individual's irrational beliefs that include thoughts or thinking processes that are rigid and illogical:- and it is not true that stress arises from the events experienced by the individual (Ellis & Bernard, 2006).

Some researchers (e.g. Ellis, Beck, Rimy and others) state that many theories of interpretation of human behavior have continued, focusing on the content of ideas being the basis for explaining many psychological disorders that people suffer from until new cognitive models emerged that focus not only on the content of ideas and beliefs but rather focused on The way these thoughts are interpreted along with the strategies needed for dealing with. This is the reason for the emergence and persistence of these psychological theories such as Well's Theory of Metacognitive Therapy.

In support of the previous, Wells and Purdon (1999) believe that much needs to be done to reach an understanding and treatment of psychological disorders. In addition, some contemporary researchers have emphasized the existence of deficiencies and weaknesses in the general cognitive theory and hence have proposed a framework for the conceptual cognitive perception of emotional functional disorder. Calamari., Cohen., Rector., Shimizu., Riemann. and Nordberg. (2005) also argue that the content of thought and cognitive beliefs have a very limited role in the occurrence of psychological disorders. This means that there is a difference in cognitive processing that needs to be understood, and this contradicts the theories of Ellis and Beck which give the main role to dysfunctional beliefs. Wells believes that the targeted beliefs in light of modern theories are metacognitive beliefs and opposes this trend, asserting that the targeted beliefs that we seek to discover and define in the light of recent theories in order to get rid of the causes of psychology disorders (i.e. anxiety, depression, stress etc.) are negative metacognitive beliefs.

Reviewing some relevant studies, we came out with four categories of these studies based on their findings:- The first group found a positive and statistically significant correlation between metacognitive beliefs and psychological disorders (e.g. Kim & Jun 2015; Moatamedi., Borjali; Sohrabi-Asmarodi; Delavar., & Tangestain., 2018). The second group or category concluded that metacognitive beliefs have mediated the relationship between perceived stresses and negative emotions (e.g. Spada., Nikcevic., Moneta., & Wells, 2008). The third category confirmed a statistically significant correlation between metacognitive variables and mental health among university students. The four and last category concluded that cognitive control and cognitive flexibility play an important role in developing an individual's ability to cope with constantly changing environments (e.g. Gabrys, Tabri, Anisman & Matheson, 2018; Wegner, 1988). In other words, cognitive flexibility helps the individual to cope with himself and with the changes, challenges and pressures surrounding him, and thus achieve a reasonable amount of mental health and psychological balance.

This is what made the researchers avoid the weaknesses in ancient theories that focus on content and ignore the metacognitive processes responsible for the interpretation, observation and reassessment, and therefore we settled on choosing variables of metacognitive beliefs and thought control strategies to predict the perceived stresses of students who are being prepared for work in early childhood, and arriving at a model that researchers, educational guides, and counseling service providers rely on in schools and universities. This will surely help with planning and building up counseling programs to treat university students who suffer from psychological stress.

Based on the reviewed relevant studies, the researchers formulated the following hypotheses:

- 1- There is a statistically significant positive correlation between the degrees of female students on the Metacognitive Beliefs Scale and their degrees on the Perceived Stress Scale.
- 2- There is a statistically positive correlation between the students' degrees on the Thought Control Strategies Scale and their degrees on the Perceived Stress Scale.
- 3- Psychological disorders can be predicted from the research participants' Metacognitive Beliefs Scale.
- 4- Perceived stress can be predicted from thought control strategies of the research participants.
- 5- A constructive model can be reached that determines the nature of the relationship between Perceived Stress and each of the metacognitive beliefs and thought control strategies.

METHODOLOGY

Participants and procedures

Participants (n = 200) were female student teachers in, the sixth and seventh levels in the College of Girls at, Prince Sattam bin Abdelaziz University, Wadi Al-Dawasir branch, whose ages ranged between 18-21 (M = 19.2, SD= 1.0).

Participants were randomly selected; and recruited via direct connection and direct mailings. All procedures were approved by respective Institutional Review Boards and Research Committees. All participants provided informed consent to participate in the study.

Data Collection and Ethical Concerns

Data were collected during the period from March 11 to May 24, 2019, after obtaining approval from the Institutional Life Research Ethics Committee (CKU-19-01-0101). In total, 410 university students who expressed their willingness to participate in the study signed written consent forms and then they were briefed and given instructions into how to participate after receiving an explanation about the purpose and confidentiality of any data obtained in the study. Further details were also provided on the anonymity of the research, the research purposes being assured of the data collection, and their right to refuse to participate or withdraw (at any time and for any- or no - reason) from the study without any disadvantages or negative impacts. The time required to complete the survey was 10~15 minutes and small rewards were provided for the participants. Of the total delivered 410 surveys, 405 were returned and only 200 of the responses were used for the final data analysis.

Data analysis

We analyzed data in three stages by using SPSS 22.0, and AMOS 22. At the first stage, we examined the properties of the variables using descriptive statistics and internal consistency. Cronbach's alpha was used to determine estimated internal consistency and was considered satisfactory at $\alpha = .70$ or above (Bland & Altman, 1997). Further, we conducted confirmatory factor analyses (CFA) to test the equivalence of the measurement model for the construct validity of scales. In the second stage, we conducted Stepwise Multiple Linear Regression analysis to answer the 1st and 2nd research questions. Third, we conducted Structural Educational Model (SEM) analysis to answer the 3rd research on the question. In the first step. The maximum likelihood estimation in AMOS 22 was used to conduct all CFAs and structural educational models.

Model fit was evaluated using the following indices: Chi-Square goodness-of-fit (χ^2), Comparative Fit Index (CFI > .90 acceptable, and > 0.95 desirable); (Hu & Bentler, 1998), Tucker-Lewis Index (TLI > .90 acceptable, and > 0.95 desirable; Hu & Bentler, 1998), Root Mean Square Error of Approximation (RMSEA < .05 good fit; < .08 acceptable fit; < .10 poor fit);(Kline, 2005) using a 90% confidence interval, and Standardized Root Mean Square Residual (SRMR < .05 good fit, and < 0.08 acceptable fit); (Hu & Bentler, 1999). A chi-square difference test was used to compare the fit of the single-factor structure with the three-factor structure. A statistically significant difference ($p < .05$) indicates better fitness of the model with smaller chi-square value.

Measure

Perceived Stress Scale (PSS)

The PSS was developed by Cohen, Kamarck, and Mermelstein (1983) to be used to measure the degree to which life in the past month has been experienced as unpredictable, uncontrollable and overwhelming (e.g. "In the last month, how often have you felt nervous and "stressed"?") on a 5-point response scale (0 = "never", 1=" almost never", 2=" sometimes", 3=" fairly often", 4=" very often"). The scale was later translated from English to German and subsequently back-translated by two interdependent bilingual speakers. After reversing the scores on the four positively stated items (items 4, 5, 7, and 8), a PSS-10 total score was obtained by summing up all the 10 items. Higher scores indicated a higher level of perceived stress. As the PSS is not a diagnostic instrument, there are no cut-off scores.

Factor structure of PSS

To verify the Perceived Stress Constructive Scale, confirmatory factor analysis was used. The model was tested for the Perceived Stress Scale, which consists of 10 items. The following table shows the values of model fit statistics for model confirmatory factor analysis of the Perceived Stress Scale:

Table 1: Model fit statistics for the measurement model of psychological disorders scale

Model fit statistics	Value
chi-square	58.68
(Df)	33
chi square/ Df	1.778
NFI	0.918
CFI	0.907
IFI	0.911
GFI	0.946
SRMR	0.063

RMSEA	0.058
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It is clear from the above table that the values of model fit statistics were good and fall within the acceptable limits, which indicates the conformity of the measurement model to the actual data:

Table 2: Confirmatory factor analysis for Psychological disorders scale

Items	Regression Weights	Standard error	Z value	Items	Regression Weights	Standard error	Z value
1	0.573	0.083	7.62	6	0.523	0.076	3.42
2	0.367	0.078	4.59	7	0.451	0.075	3.10
3	0.644	0.079	7.38	8	0.677	0.071	9.23
4	0.392	0.079	3.70	9	0.724	0.079	9.95
5	0.384	0.085	4.90	10	0.480	0.080	6.26

All z values in this table are significant at (0.01 level)

It is clear from the above table that all the values of Regression Weights were greater than 0.3 and statistically significant at the level of 0.01, which confirms and verifies the structural reliability of the Perceived Stress Scale, and the figure below shows model confirmatory factor analysis of Perceived Stress Scale.

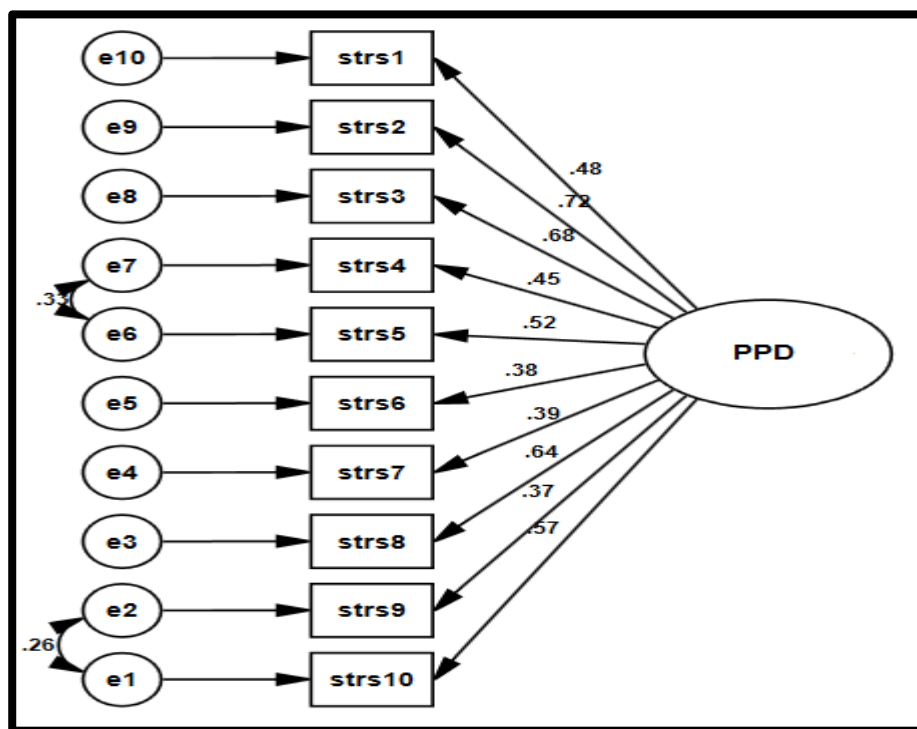


Figure 1: Scale Confirmatory factor analysis of Perceived Stress

Reliability of PSS

To check the reliability of the Perceived Stress Scale, the Spearman-Brown equation for the midterm hash, and the Alpha Cronbach equation was used. The obtained value was 0.707, which was greater than (0.7), indicating the reliability of the scale.

Thought Control Questionnaire

The TCQ scale (Wells and Davies, 1994) is a 30-item scale assessing strategies for controlling unpleasant and unwanted thoughts? The items are answered on a four-point Likert scale in terms of how often a person uses each technique, ranging from 1 (never) to 4 (almost always). The scale is broken down into five broad techniques: distraction (e.g., I do something that I enjoy), social control (e.g., I ask my friends if they have similar thoughts), worry (e.g., I focus on different negative thoughts), punishment (e.g., I get angry at myself for having the thoughts), and re-appraisal (e.g., I analyze the thought rationally). Previous research has demonstrated adequate test-retest reliability, internal consistency, and convergent validity (Wells and Davies, 1994). The subscale internal consistency coefficients for this sample ranged from fair (Social control $\alpha = 0.77$) to good (Worry $\alpha = 0.84$).

Factor Structure of TCQ

To constructively validate the construct validity of the thought control strategies scale, confirmatory factor analysis was used. The measurement model was tested for thought control strategies scale. (6 subscales, each one includes 6 items), and so the total number of items in the original scale is 30, and the table below shows the values of model fit statistics for model confirmatory factor analysis of thought control strategies scale:

Table 3: Model fit statistics for the measurement model of TCQ

Model fit statistics	Value
chi-square	727.502
(Df)	395
chi square/ Df	1.842
NFI	0.928
CFI	0.936
IFI	0.947
GFI	0.949
SRMR	0.065
RMSEA	0.072

It is clear from Table 3 above that the values of model fit statistics were good falling within the acceptable limits, which indicates measurement model conformity to actual data.

Table 4: Confirmatory factor analysis of thought control strategies scale

Dimensions	Items	Regression Weights	Standard error	Z value	Dimensions	Items	Regression Weights	Standard error	Z value	
Distraction	1	0.32	0.071	4.13	Worry	22	0.54	0.081	6.88	
	9	0.45	0.072	6.01		24	0.41	0.075	5.15	
	16	0.75	0.088	10.65		26	0.38	0.144	3.47	
	Social control	19	0.57	0.070	7.72	Punishment	2	0.36	0.076	4.60
		21	0.44	0.081	5.86		6	0.52	0.071	7.00
		30	0.32	0.078	4.08	11	0.59	0.075	8.17	
5		0.34	0.088	4.31	13	0.72	0.073	10.24		
Worry	8	0.54	0.075	7.12	15	0.39	0.087	5.06		
	12	0.73	0.101	9.61	28	0.48	0.081	6.35		
	17	0.51	0.081	5.02	Reappraisal	3	0.36	0.069	4.34	
	25	0.37	0.075	7.06		10	0.33	0.081	3.96	
	29	0.45	0.076	4.17		14	0.35	0.087	3.03	
4	0.41	0.068	5.04	20	0.32	0.105	3.87			
7	0.56	0.081	7.18	23	0.39	0.080	4.72			
18	0.44	0.084	5.48	27	0.54	0.081	6.56			

All values in this table are significant at (0.01 level)

It is clear Table 4 above that all the values of Regression Weights were greater than 0.3 and thus are statistically significant at the level of 0.01, which confirms the verification of structural validity of the Thought Control Strategies Scale. Figure 2 shows the model confirmatory factor analysis of the Thought Control Strategies Scale.

Reliability of TCQ

To check the reliability of the Thought Control Scale, the Spearman-Brown equation for the mid-term and the Alpha Cronbach equation was used, whereby the Thought Control Strategies Scale was administered to a polling sample of 200 students. Split-half reliability and Cronbach's alpha results are shown in the table below:

Table 5: TCQ reliability

n	Dimensions	Reliability coefficient	
		Cronbach's alpha	Split-Half Reliability
1	Distraction	0.726	0.737
2	Social control	0.742	0.800
3	Worry	0.714	0.748
4	Punishment	0.725	0.757
5	Reappraisal	0.757	0.799
	Total scale	0.712	0.771

It is clear from the above table 5 that the values of the stability coefficients were all greater than (0.7), which indicates the reliability of the Thought Control Strategies Scale.

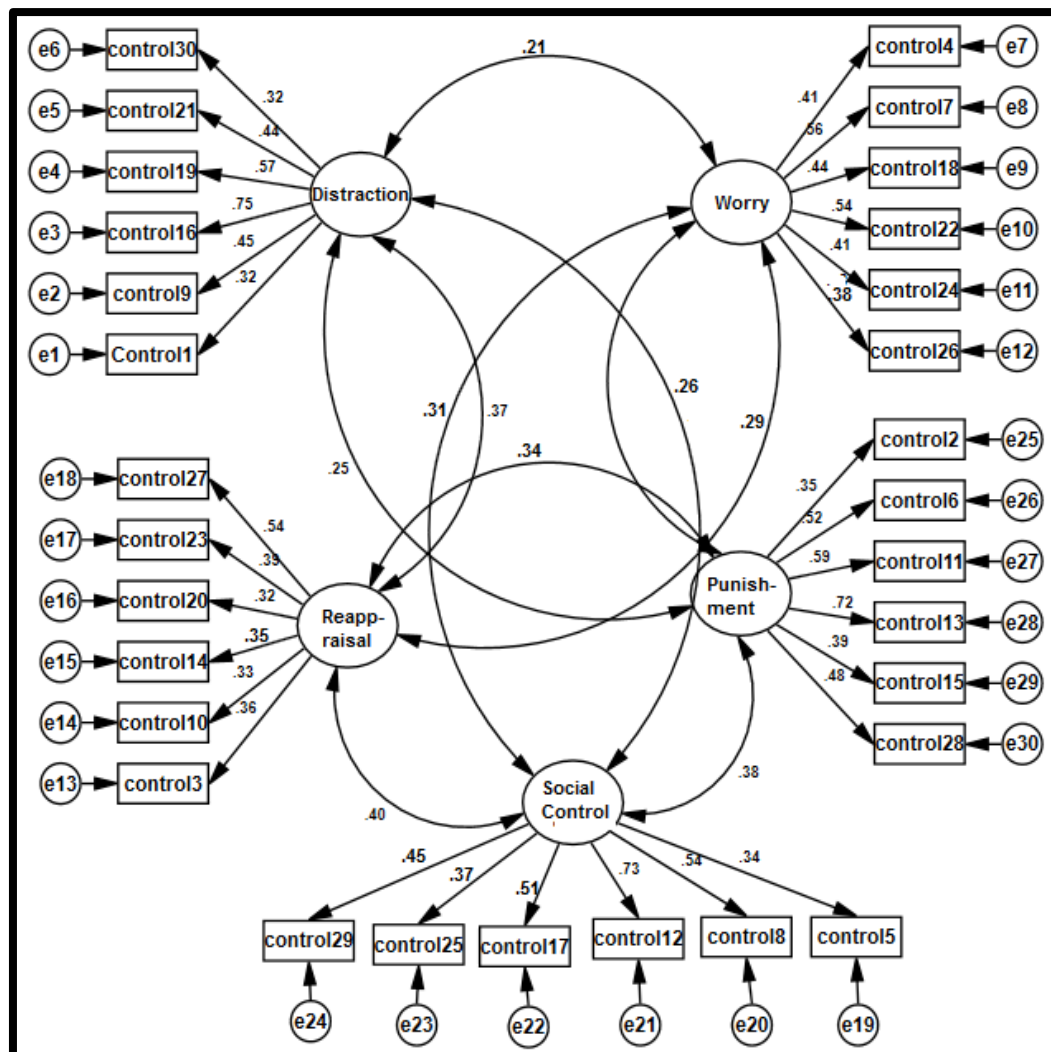


Figure 2: Regression Weights for TCQ

Metacognition Questionnaire-30

Metacognition Questionnaire MCQ-30 (Wells & Cartwright-Hatton, 2004) is a self-report measure that assesses individual differences in metacognitive beliefs, judgments and monitoring tendencies. It consists of five replicable sub-scales represented by 30-items by a total of 30-items. Each of the five sub-scales measures one of the following dimensions of metacognition, respectively: (1) positive beliefs about worry; (2) negative beliefs about worry associated with uncontrollability and danger; (3) cognitive confidence; (4) beliefs about the need to control thoughts; and (5) cognitive self-consciousness. Each item is answered on a four-point Likert scale ranging from 1 (disagree) to 4 (strongly agree). Higher scores indicate higher levels or degrees of unhelpful/unuseful. The MCQ-30 possesses good psychometric properties (Spada, Mohiyeddini & wells, 2008).

Factor structure of MCQ-30

To construct a valid scale of metacognitive beliefs, confirmatory factor analysis was used. The scale of the metacognitive beliefs model was tested. The measurement model consists of five subscales: (1) Positive beliefs about a concern which includes 6 items; (2) negative beliefs about uncontrollability to thoughts and anger, which includes 6 items; (3) cognitive confidence which includes 6 items; (4) beliefs about the need to control which includes 6 items; (5) cognitive self-consciousness which includes 6 items. Thus, so the total number of items in the measurement model is 30 items, the table below shows the values of model fit statistics for model confirmatory factor analysis of metacognitive beliefs:

Table 6: Model fit statistics for the measurement model of scale MCQ-30

Model fit statistics	Value
chi-square	747.46
(Df)	395
chi square/Df	1.892
NFI	0.939
CFI	0.903
IFI	0.913
GFI	0.916
SRMR	0.067
RMSEA	0.054

It is clear from the table above that the values of model fit statistics were good and fall within acceptable limits, which indicates the conformity of the measurement model to the actual data. The table below shows the values of Regression Weights and their statistical significance for scale metacognitive beliefs according to the confirmatory factor analysis model:

Table 7: Confirmatory factor analysis for MCQ-30

Dimensions	Item	Regression Weights	Standard error	Z value	Dimensions	Items	Regression Weights	Standard error	Z value
Positive beliefs about worry	1	0.435	0.073	5.42	Cognitive confidence	24	0.308	0.076	3.88
	7	0.545	0.081	6.93		26	0.659	0.070	9.00
	10	0.641	0.071	8.27		29	0.603	0.084	8.13
	19	0.371	0.100	4.57	Beliefs about need to control	6	0.326	0.096	4.14
	23	0.602	0.075	7.72		13	0.468	0.132	3.58
	28	0.458	0.242	3.01		20	0.664	0.079	8.67
Negative beliefs about uncontrollability to thoughts / dangerous	2	0.607	0.071	8.70	22	0.483	0.096	6.29	
	4	0.740	0.070	11.19	25	0.347	0.079	4.42	
	9	0.682	0.068	10.07	27	0.169	0.105	3.11	
	11	0.317	0.124	4.19	Cognitive self-consciousness	3	0.304	0.074	3.36
	15	0.694	0.070	10.29		5	0.331	0.080	4.00
	21	0.641	0.070	9.30		12	0.330	0.087	3.99
Cognitive confidence	8	0.387	0.081	4.95	16	0.719	0.089	8.24	
	14	0.400	0.071	5.13	18	0.684	0.088	7.94	
	17	0.681	0.070	9.35	30	0.324	0.081	3.58	

All Z values in this table are significant at (0.01)

It is clear from the table above that all the values of Regression Weights were greater than 0.3 with a statistical significance at the level of 0.01, which confirms the verification of structural metacognitive beliefs. Figure 3 shows the model confirmatory factor analysis scale of metacognitive beliefs.

Reliability of MCQ-30

To check the reliability of the Metacognitive Beliefs Scale, the Spearman-Brown equation was used for the split-half and the Alpha Cronbach equation, where the Metacognitive Beliefs Scale was administered to a polling sample of 200 students. The reliability of the scale was calculated using the Spearman-Brown equation for the split-half and the Alpha Cronbach equation as shown in the table below:

Table 8: MCQ-30 reliability

Dimensions	Reliability coefficient	
	Cronbach's α	Split half
1 Positive beliefs about worry	0.762	0.840
2 Negative beliefs about uncontrollability to thoughts / dangerous	0.783	0.743
3 Cognitive confidence	0.832	0.852
4 Beliefs about need to control	0.744	0.788
5 Cognitive self-consciousness	0.712	0.788
Total scale	0.755	0.834

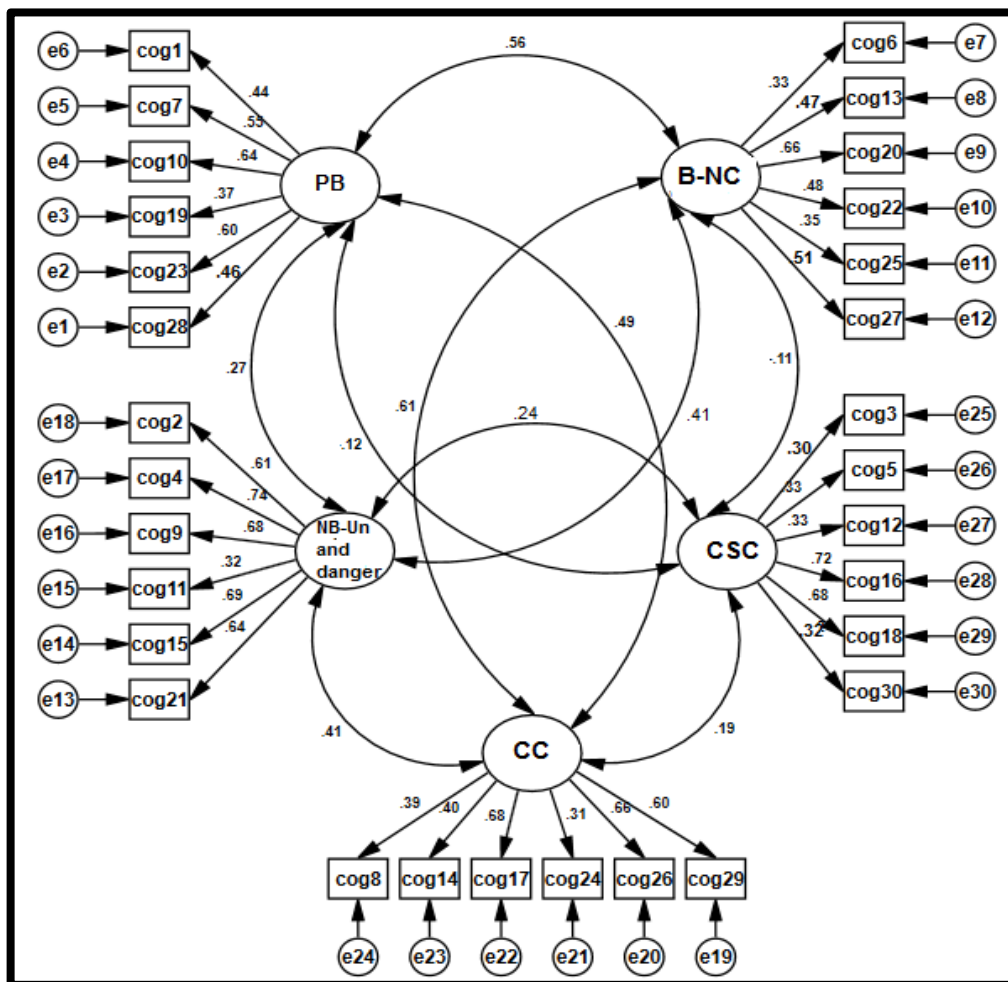


Figure 3: Regression weights for MCQ-30

RESULTS/FINDINGS

In this section, we will present the main results of the study based on the suggested hypotheses. The first hypothesis states that "there is a statistically significant positive correlation between the degrees of female students on Metacognitive Beliefs Scale and their degrees on the Perceived Stress Scale." To verify the validity of this hypothesis, the Pearson's correlation coefficient was used to detect the correlation between the degrees of female students on both scales as shown in the table below:

Table 9: Correlation between MCQ-30 and PSS

Metacognitive beliefs Scale	Dimensions	Perceived stress scale	Significant
	Positive beliefs about worry	0.072	Non-significant
	Negative beliefs about uncontrollability to thoughts / dangerous	0.344	0.01
	Cognitive confidence	0.267	0.01
	Beliefs about the need to control	0.165	0.05
	Cognitive self-consciousness	0.026	Non-significant
	Total Metacognitive beliefs	0.331	0.01

The results of the second hypothesis

The second hypothesis states that "There is a statistically positive correlation between the students' degrees on the Thought Control Strategies Scale and their degrees on the Perceived Stress Scale." To verify the validity of this hypothesis, the Pearson's coefficient was used to identify the correlation between the student's degrees on both TCQ and the PSS as shown in the table below:

Table 10: Correlation between TCQ and PSS

Thought control strategies scale	Dimensions	Perceived Stress Scale	Significant
	Distraction	0.015	Non-significant
	Social control	0.226	0.01
	Worry	0.197	0.01
	Punishment	0.199	0.01
	Reappraisal	0.161	0.05
	Thought control strategies scale	0.242	0.01

The results of the third hypothesis

The third hypothesis states that "Psychological disorders can be predicted from metacognitive beliefs in the research sample " To verify the validity of this hypothesis, multiple linear regression analysis was used, given that perceived stress is a dependent variable and metacognitive beliefs is an independent variable. Stepwise Multiple Linear Regression analysis was conducted and three models of regression were found as shown in the table below:

Table 11: Multiple Linear Regression of PSS on MCQ

Model	Variables	Unstandardized coefficient		Standardized coefficient	f value	t value	R	R ²
		Value	standard error					
1	Constant	26.02	1.17		26.59**	22.34**	0.344	0.118
	Negative beliefs about uncontrollability to thoughts and dangerous	0.40	0.08	0.34		5.16**		
2	Constant	23.88	1.39		17.43**	17.19**	0.388	0.150
	Negative beliefs about uncontrollability to thoughts and dangerous	0.34	0.08	0.29		4.28**		
	Cognitive confidence	0.23	0.09	0.19		2.72**		

**significant at (0.01)

The table above shows the following: The second model is accepted as it includes an acceptable improvement in the value of the multiple correlation coefficient R compared to the first model. The value for the second regression model has reached 17.43 which is statistically significant value at the significance level of 0.01. The value of the multiple

correlation coefficient R 0.388 and the value of the square of the multiple correlation coefficient (The coefficient of determination (R² 0.150, means that the negative variables about uncontrollability to thoughts and anger, and cognitive confidence in the second model explain 15.0% of the total variance in the dependent variable (Perceived Stress). The variables (Positive Beliefs about worry, beliefs about the need to control, and cognitive self-consciousness) did not contribute significantly to predicting perceived stress in the research sample.

The results of the fourth hypothesis

The fourth hypothesis states that "perceived stress can be predicted through thought control strategies in the research sample" To verify the validity of this hypothesis, multiple linear regression analysis was used, given that perceived stress is a dependent variable thought control strategies are independent variables. Stepwise Multiple Linear Regression analysis was conducted and three models of regression below were found as shown in the table:

Table 12: Multiple Linear Regression of PSS on TCQ

Model	Variables	Unstandardized coefficient		standardized coefficient	f value	t value	R	R ²	
		Value	Standard error						
1	Constant	27.10	1.48		10.61**	18.28**	0.226	0.051	
	Social control	0.28	0.086	0.23					3.26**
2	Constant	25.68	1.61		7.691**	15.92**	0.269	0.072	
	Social control	0.24	0.088	0.19					2.67**
	Worry	0.18	0.086	0.15					2.14*

**significant at (0.01), *significant at (0.05)

The table below shows the following: The second model is accepted as it includes an acceptable improvement in the value of the multiple correlation coefficient R compared to the first model. The value for the second regression model reached 17.43 which is statistically significant value at the significance level of 0.01, and the value of the multiple correlation coefficient R was 0.269 while the value of the square of coefficient Multiple correlation (coefficient of determination) is R² 0.072, meaning that the independent variables (social control, worry) in the second model explain 7.2% of the total variance in the dependent variable (perceive stress). The variables (distraction, punishment, reappraisal) do not contribute significantly to the prediction of perceived stress in the research sample.

The results of the fifth hypothesis

The fifth assumed hypothesis states that "a constructive model can be reached that determines the nature of the relationship between perceived stress and each of the metacognitive beliefs, and thought control strategies" To validate this hypothesis, modeling with structural equations was used, as a model for the relationship between perceived stress (as dependent variables) and each of the Metacognitive beliefs Thought control strategies (as an independent variable) was constructed, as shown in the figure below:

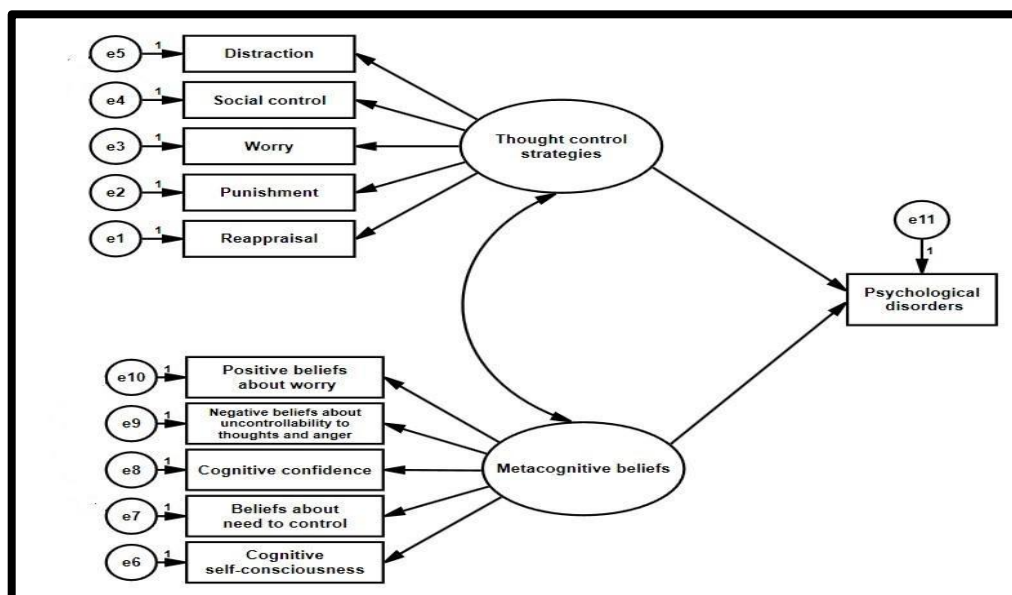


Figure 4: The structural model including standard values of paths between variables













The conformance of the previous model was verified using the Amos v20 program and the model achieved an acceptable match. The table below shows the values of the structural model matching:

Table 13: Model fit statistics for the construct model

Model fit statistics	Value
chi-square	81.258
(Df)	40
chi square/ Df	2.03
NFI	0.951
CFI	0.952
IFI	0.966
GFI	0.966
SRMR	0.077
RMSEA	0.073

It is noted from the table below that the value of chi-square / Df was (2.03) which is less than 3, and the values of NFI, CFI, IFI, GFI were 0.951, 0.952, 0.966, 0.966, respectively. All of them have values greater than (0.95), and the value of SRMR 0.077 and the value of (RMSEA) was 0.073 which is less than 0.08. Also from the above table, it has become clear that the model fit statistics of the model was acceptable, which indicates the validity of the model and its correspondence with the data of the research sample; the standard values for the paths included in the structural model have been estimated as shown in the table above:

Table 14: Standardized regression weights for the constructed model

Variables	regression weights		standard error	z value		
	Unstandardized	Standardized				
Thought control strategies	 Distraction	0.956	0.355	0.288	3.319	
	 Social control	1.787	0.484	0.269	6.630	
	 Worry	2.167	0.573	0.269	8.047	
	 Punishment	2.636	0.685	0.264	9.978	
	 Reappraisal	2.111	0.647	0.227	9.317	
Metacognitive beliefs	 Positive beliefs about worry	1.891	0.395	0.371	5.103	
	 Negative beliefs about uncontrollability to thoughts / dangerous	2.462	0.630	0.273	9.034	
	 Cognitive confidence	1.267	0.344	0.277	4.573	
	 Beliefs about need to control	2.431	0.710	0.240	10.143	
	 Cognitive self-consciousness	1.111	0.331	0.253	4.383	
	 Perceived stress	3.048	0.189	0.774	3.938	
Thought control strategies		Perceived stress	5.498	0.305	0.762	7.215

All z values in the table are significant at (0.01)

It is clear from the table above that all the values of "z" were significant at the level of 0.01, and there is a statistically significant effect at the 0.01 level of both thought control strategies and metacognitive beliefs on perceived stress, where the standard value of the effect of thought and belief control strategies on perceived stress 0.189 has reached the normative value of the effect of metacognitive beliefs on PS 0.305, The structural construct model in Figure (4) below shows the standard values of paths between variables:

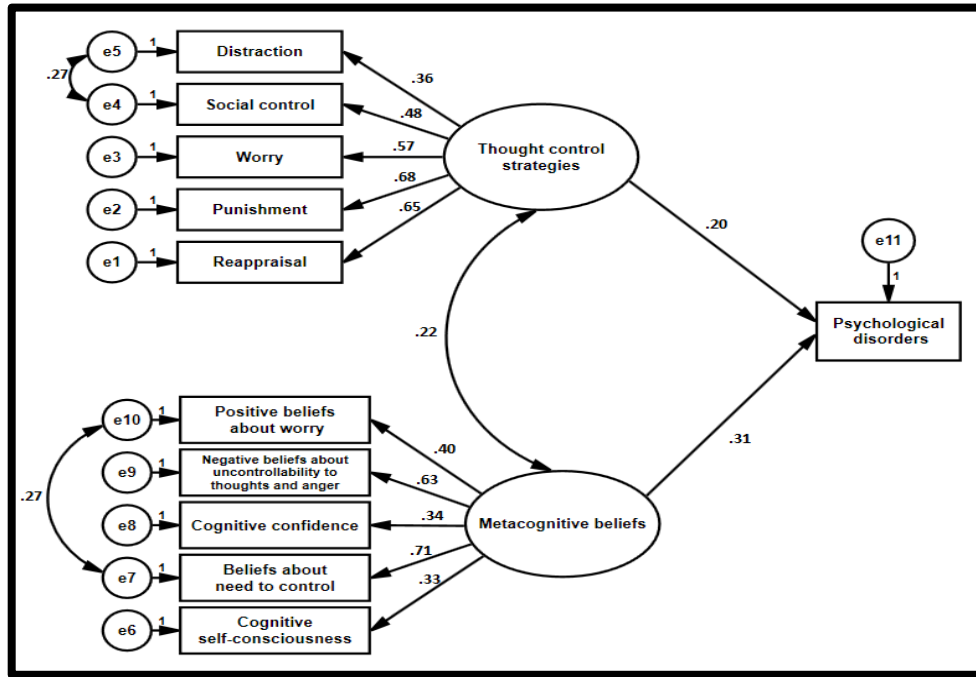


Figure 5: The construct model with standardized regression weights

DISCUSSION / ANALYSIS

Commenting on the results of the first hypothesis, stating that, "There is a statistically significant correlation between perceived stresses and metacognitive beliefs, the correlation coefficient value was significant at the 0.01 Level between perceived stresses and each of the following metacognitive beliefs: (1) Negative beliefs about uncontrollability to thoughts / dangerous, and (2) Cognitive confidence). The correlation result was effective at the 0.05 level between perceived stresses and beliefs of the need to control ideas. The correlation value was not significant with positive beliefs about anxiety and cognitive self-awareness. These results are consistent with the results of a study by [Moatamedi et al, \(2018\)](#). They indicate that people with stress have negative beliefs about their uncontrollability to thoughts/danger that occupy them and cause anxiety to them. They also believe that they are unable to control the dangers that these intrusive ideas will cause. Also, Cognitive confidence beliefs are positively linked showing that people with stress have confidence in their memories and in the ideas that parasitize them, leading them to believe them and drift behind them. This explains why the stress persists despite their suffering and their desire to get rid of them. In addition, they do not believe in the benefits of excess concern and the importance of escape from stress. Results showed that awareness of self-cognitiveness has low.

As for the second hypothesis stating, "There is a statistically significant correlation between perceived stresses and thought-control strategies", the results showed that the perceived stresses are significantly correlated at 0.01 with the following thought-control strategies: (social control, anxiety, and punishment). This finding is consistent with the results of a study by [Gabrys et al, \(2018\)](#). This result has something to explain, as people with pressure tend to share with others their suffering through talking to them, as they tend to use the anxiety strategy, and they tend to punish themselves both physically or mentally for their failure to control these ideas and their inability to agree with and enjoy life like others. Perceived pressures were also related to the reassessment strategy, which is a technique that some people with pressure tend to use in order to reassess intrusive ideas that cause the pressure to refute or reduce their severity. This strategy is to nullify the influence of negative and illogical thoughts on them by practicing some mental activities such as meditation or mindfulness or thinking about positive thoughts or practicing some rituals such as reading, writing, praying, or occupying themselves with some useful actions that need to occur on their minds that confuses those ideas, even when resorted to pressure, the owners of this strategy were able to overcome them.

To analyze the results of the third predictive hypothesis, which states "Psychological stress can be predicted through metacognitive beliefs." metacognitive beliefs were presented in the MCQ-30 standard; ([Wells & Cartwright-Hatton, 2004](#)) as follows: (positive beliefs about anxiety; beliefs about the need for control; cognitive self-awareness, negative beliefs about the uncontrollability of thoughts/danger; and cognitive confidence).The outcome of this hypothesis concluded that stress can be predicted through beliefs beyond The following cognitive processes: negative beliefs about the uncontrollability of thoughts/danger; and cognitive confidence). The metacognitive beliefs, such as positive beliefs about anxiety; beliefs about the need for thought control; and cognitive self-consciousness beliefs did not predict the perceived stress of the research sample. The result of this hypothesis is consistent with the results study of [Kim and Jun, \(2015\)](#). We can rely on this result as a guide for work and practices committed by educational counselors at schools and universities and providers of psychological and educational counseling services in special centers when applying the

three psychological counseling approaches: developmental, preventive; and curative to face stress and reduce it. The beliefs of the inability to control ideology/danger, and beliefs of cognitive trust are cited as the main cause of the emergence and persistence of stress.

When discussing the fourth predictive hypothesis, which states, "Stress can be predicted through thought control strategies. we can say that thought control strategy as outlined in the TCQ scale; (Wells and Davies, 1994) are five thought control strategies: anxiety; thought fusion; punishment; and reappraisal. The results of this hypothesis showed that thought fusion; punishment, reappraisal strategies did not predict stress. As for strategies that predict stress, they are social control; and Worry, which are used by individuals with those around him and with his/her ideas to adapt to his/her ideas or reduce their severity. Given the normative values of adaptive and non-adaptive thought control strategies (thought fusion; social control; anxiety; punishment; and reassessment), normative values of positive and negative metacognitive beliefs (positive beliefs about worry, negative beliefs about uncontrollability thoughts/danger, cognitive confidence, beliefs about the need to control ideas, and cognitive self-consciousness), included in the constructivist paradigm that determines the nature of the pathways indicating these previous independent variables and the dependent variable which is (i.e. Perceived stress). The normative values for adaptive and non-adaptive thought control strategies are arranged as follows: Punishment 0.685, Reevaluation 0.647, and Anxiety 0.573. Finally, the strategies of social control and distraction came at last 0.484, 0.355; and thus the results of the path analysis showed that strategies for controlling non-adaptive thought (such as anxiety and punishment) are the most influencing in the perceived stresses.

The normative values for the metacognitive beliefs included in the stress model are also arranged as follows: beliefs about the need to control thoughts 0.710, negative beliefs about uncontrollability thoughts/danger 0.63, positive beliefs about anxiety 0.40. Finally, cognitive confidence and awareness came Self-knowledge (0.34, 0.33), and this result shows that the individual's beliefs about his/her urgent need control his ideas, his future negative beliefs about his inability and his inability to control his thoughts or stop the danger of its urgency and activity are the most influential beliefs of the main reasons in the extent of the perceived stress and their persistence.

This finding is consistent with what Foumany et al (2014) mentioned, which considers metacognitive beliefs as one of the effective factors in mental health and can be a general indicator of confidence. With the restoration and modification of metacognitive beliefs that have increased negative thoughts, modifying the non-adaptive methods in thinking, we can help university students manage and cope with stress, and even improve and support their mental health.

CONCLUSION

Researchers can draw on the third and fourth hypotheses by focusing on beliefs and metacognitive and thought-control strategies that predicted the pressure, where the family, teachers and educational guides can take care of the beliefs about controlling ideas/risk in dealing with children and adolescents by providing group counselling services as a goal for development and prevention, as well as training them to employ the strategy of social control in their lives to overcome ideas, as well as not to adopt a strategy of anxiety in dealing with pressure.

LIMITATION AND STUDY FORWARD

After reaching these results, it is possible to recommend some proposed future research that researchers should do in order to train adolescents and provide them with skills to deal with stress, namely: the effectiveness of a program based on metacognitive therapy in reducing psychological stress in adolescents and the effectiveness of a program based on Metacognitive therapy in reducing perceived stress among university students.

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AUTHORS CONTRIBUTION

The two researchers cooperated in this study; both of them participated in formulating the research. The first researcher collected Arabic literature related to the study, and applied the study scales to the students, and emptied their data, while the second researcher collected foreign literature, translated the study scales, and discussed the study results, and writing down the research paper.

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