

Relation Between Maladaptive Metacognitive Beliefs and Burden in Caregivers of Psychiatric Patients: Role of Resilience as a Moderator and Rumination as a Mediator

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ABSTRACT

Background: Caregivers of psychiatric patients delivered a wide range of concurrent tasks to manage patients' symptoms and adverse effects of treatment at home, such as medication management, physical care and emotional support; these tasks may leave caregivers at high risk of burden. **Aim:** To investigate the relation between maladaptive metacognitive beliefs and burden among caregivers of psychiatric patients and probe the role of rumination and resilience in the relationship. **Subjects& Method: Design:** descriptive correlational, **setting:** Port-Said psychiatric health hospital, **subjects:** Four hundreds and ninety three caregivers of persons with psychiatric disorders. **Tools:** a series of questionnaires (MCB Questionnaire, IEQ- Burden Scale, Response Style Questionnaire, CD Resilience Scale). **Results** the average scale mean score of caregivers burden was 110.152 ± 2.99 , while the overall mean score of metacognitive beliefs was (111.242 ± 3.10) . Linear mixed model analyses revealed that maladaptive metacognitive beliefs and resilience independently predicted caregivers' burden. Moreover, mediation analysis showed that rumination could be mediating the effect of maladaptive metacognitions on burden level. **Conclusion:** The current study is a first step towards understanding the role of metacognitions in psychiatric patients' caregivers' burden, with the study of resilience and rumination as influential factors. **Recommendations:** Interventions like mindfulness training and stress management techniques and coping abilities enhancement are recommended.

Key words: Caregivers' Burden, Metacognition,, Resilience, Rumination.

INTRODUCTION

Family caregivers represent a dominant and a substantial part of patient's recovery and rehabilitation plans. With a psychiatric patient, it may be convoluted and intricate task for those caregivers. Psychiatric patients require singular auspices and care due to their unique symptoms and compounding demands, in some cases, patient may become totally dependent on the caregiver for fulfilling day-to-day needs, observing the mental state of the patient, recognizing the early signs of illness, relapse and deterioration, and helping the patient in accessing services. The family caregiver also monitor patients' adherence with treatment and provide emotional and social support to him/her (Alzahrani, Fallata, Alabdulwahab, Alsafi & Bashawri, 2017).

The family caregivers should endure and sustain the behavioral and affective disturbances of the ill family members and sporadically can be also a target of the patient's abusive or aggressive behavior. They have to truncate their obligatory roles and responsibilities, and sometimes have to take leave from their jobs in order to meet patients' needs. In addition, they have to meet the financial needs of the ill member besides meeting the treatment costs (Chadda, 2014).

These caregivers' challenges can be perceived as stressors or strains; it may also engender some psychological disturbances and influence caregivers' wellbeing. Previous researches correlated the caregiving role of a psychiatric patient with burden (Ayalew, Workicho, Tesfaye, Hailesilasie & Abera, 2019; Souza et al. 2017; Mohammed & Ghaith, 2018; Walke, Chandrasekaran & Mayya, 2018), stress (Pedroso, AraújoMaria, Santos, Galera, 2019; Rao, Grover, Chakrabarti, 2018), psychological distress (Udoh, Omorere, Sunday, Osasa & Amoo, 2021); depressive disorders (Mishra & Shakya, 2021), anxiety (Cabral, Duarte, Ferreira & dos Santos, 2014); and eventually poor quality of life (Neong & Rashid, 2018).

Preliminary studies aimed at understanding the psychological and cognitive factors associated with psychological disturbances, on this context, Wells and Matthews in 1996 developed the Self-Regulatory Executive Function (S-REF) model. They proposed that persons have a set of specific metacognitions that guide, influence and control their reactions based on their own cognitive experiences (Jansen et al, 2020). The term metacognition refers to "the aspect of information processing that monitors, interprets, evaluates, and regulates the contents and processes of its organization" (Wells

and Purdon, 1999). Earlier researches revealed that dysfunctional metacognitive modalities are associated with the increased vulnerability to distress, anxiety and depression; not only for patients with psychiatric disorder (Bonfils, Minor, Leonhardt & Lysaker, 2018; Bonfils, Lysaker, Minor & Salyers, 2019; Chuang, Wu & Wang, 2021) or medical diagnosis such as cancer and stroke (Cook et al, 2014; Donnellan et al, 2016; Sun, Zhu & So, 2017) but also extended to the context of stressful daily life events (Purewal & Fisher, 2018; (Quattropiani, Geraci, Lenzo, Delle-Chiate & Filastro, 2018a; Quattropiani et al, 2018b).

Furthermore, neoteric studies applied on non-clinical samples as patients' caregivers confirmed that metacognition is significantly attributed with the perception of stress and negative emotions and consequently affect the psychological wellbeing of the caregiver (Anyan, Morote & Hjemdal, 2020; Chen et al, 2021; Jansen et al, 2017; Lenzo et al, 2020; Lenzo, Sardella, Martino & Quattopiani, 2020).

A substantial body of literature and researches highlighted two important variables—rumination and resilience—to be involved in persons' psychological and physiological changes after stressful events (Qi & Jinsheng, 2022). Resilience alludes to the process and the outcome of successful adaption to difficult or challenging life experiences, particularly through the mental, emotional, and behavioral flexibility and adjustment to external and internal demands. As concluded by preceding studies, persons with high level of psychological resilience have ability to cope with problems without a decrease in their functionality and with minimal or no psychosocial impact (Su, Liu, Li & Chen, 2020) , on the other hand, negative experiences such as inability to cope effectively with the difficulties experiences, inadequacy in solving the problems, and having chronic stress levels can be related to low psychological resilience levels (Abd El-Ghafar, Abd El-Nabi & Fathalla, 2018; Ağaç & Üzar-Özçetin, 2022).

While resilience may be a part of person's personality, it can also be acquired as an environmental function and shaped by life experience. Distinct studies' results (Ferreira, Marques, & Gomes, 2021; Helmreich et al, 2017; Wang, Chi, Zhan, Chen & Li, 2021) about the application of interventions for psychological resilience, expounded that reinforcing the psychological resilience improves the mental health status and psychological wellbeing of patients and their families.

Rumination refers to person's response to negative feelings, which includes automatic behaviors and thoughts about symptoms of psychological distress and their implications. People with a ruminative style tend to overwhelm in their distress, wondering about causes and regretting the situations (Calvete, Franco, Onate, Alonso & Bermejo-Toro, 2021). It includes two components; brooding and reflection. Brooding consists of a passive and contemplative attitude that compares the current situation with a standard unachieved situation with an attitude of regret, while reflection is focused to find a cognitive solution to the problem (Campbell, Curan, Inkpen, Katsikitis & Kannis-Dymand, 2018). The role of rumination has been examined in studies comprising different samples of family caregivers, and results reflected its relevance with higher levels of distress, such as anxiety and depression among caregivers (Liu, Jiang, Wang, Liu & Wu, 2017; Li et al, 2019a).

Significance of the study

Diversified researches' results concluded that caregivers of psychiatric patients experience a higher level of stress, anxiety and depression than those caring for someone with functional impairment from other chronic medical illnesses. The burden perceived by caregivers of patients with psychiatric illness is a fundamental prognostic aspect in the history of the disease; moreover, caregiver's impaired psychological wellbeing is reportedly a critical determinant for negative caregiving outcomes, family functioning, social interaction, financial condition, and health. Metacognition, resilience and rumination proved to be influential factors in psychological wellbeing; thus this study is an attempt to identify their effects on caregivers' level of burden.

AIM OF THE STUDY

This study aimed to explore the relation between maladaptive metacognitive beliefs, burden among caregivers of psychiatric patients and probe the role of psychological resilience and rumination in the relation.

Study questions

1. Is there a significant relation between maladaptive metacognitive beliefs and burden among caregivers of psychiatric patient?
2. Does psychological resilience affect the relation between maladaptive metacognitive beliefs and burden among caregivers of psychiatric patient?

3. Does rumination mediate the relation between maladaptive metacognitive beliefs and burden in caregivers of psychiatric patient?

SUBJECT AND METHOD

I. Technical design

Study design

A descriptive correlational research design utilized in this study

Study setting

This study was conducted in psychiatric outpatient clinics at Port Said Psychiatric Health Hospital. This hospital is affiliated from the General Secretariat of Mental Health and Addiction Treatment (GSMHAT), Ministry of Health and it includes four inpatient psychiatric units and one department for substance abuse. In addition, two outpatients' clinics accessible all days- except Friday- from 9 a.m. to 2 p.m. The clinics consist of four rooms; two rooms for the psychiatrists, one room for the consultants and the fourth room for nurses assisting in treatment.

Study Subjects

The sample size was determined by using the following equation was used (*Dobson, 1984*):

$$\text{Sample size (n)} = \frac{Z^2}{\Delta^2} P (100 - P)$$

Where:

n: Sample size

P: Prevalence of caregivers of psychiatric patients

$Z_{\alpha/2}$: A percentile of standard normal distribution determined by 95% confidence level = 1.96

Δ^2 : The width of the confidence interval = 7.

Sample Size (n) = 493 caregivers

The total sample size will include 493 caregivers

All convenient caregivers attended the outpatient clinics were included in the study. Eligible participants were caregivers (a) of patients who diagnosed with psychiatric disorder for at least 6 months, (b) currently enrolled in an outpatient clinic for follow up and treatment, (c) willing to participate in the study, (d) have no psychiatric disorders and finally (e) did not receive any psychotic medication or treatment before conducting this

study. Data was collected from the beginning of September 2021 until the beginning of January 2022.

Tools of data collection

The researcher utilized the following tools in obtaining the data for the present study:

1. Metacognitive Beliefs Questionnaire

Maladaptive metacognition of the caregivers was measured by the MCQ-30 (Wells & Cartwright-Hatton, 2004), which is a 30 statements self-report questionnaire in an English language with five domains: (a) positive beliefs about worrying (e.g., ‘Worrying helps me avoid problems in the future’); (b) negative beliefs about worry concerning uncontrollability and danger (e.g., ‘When I start worrying I can’t stop’); (c) cognitive confidence (e.g., ‘I do not trust my memory’); (d) beliefs about need to control thoughts (e.g., ‘If I did not control a worrying thought and then it happened it would be my fault’); and (e) cognitive consciousness (e.g., ‘I constantly observe my thoughts’). Each of the belief statements is written so that reference is made to unwanted intrusive thoughts. Individuals rate their level of agreement on a 4-point Likert scale with a score ranging from 30 to 120 (Jansen et al, 2015).

2. Involvement Evaluation Inventory

To assess caregivers’ burden, the researcher adopted the Arabic version of the Involvement Evaluation Inventory (Wijngaarden et al, 2000). It is a 29-item instrument that measures the consequences of psychiatric disorders on caregivers of people with mental illness. Inventory items were grouped into four domains, namely, “Tension” (9 items), “Worrying” (6 items), “Urging” (8 items), and “Supervision” (6 items). These items rated on Likert scale (a five-point, from 0 to 4). Total scores range between 0 and 108, where higher scores representing high level of burden.

3. Connor and Davidson Resilience Scale

Psychological resilience was measured by the Connor and Davidson Resilience Scale (CD-RISC) in an English language (Connor & Davidson, 2010) and translated into an Arabic language by the researcher. It measures personal features/ characteristics that enable people to thrive after exposure to stress and trauma. The CD-RISC involves 25 items and five dimensions (*Personal competence*, high standards, and tenacity; *Trust in one's instincts*, tolerance of negative affect, and strengthening effects of stress; *Positive acceptance of change* and secure relationships; *Control*; and eventually *Spiritual influences*) (Li et al, 2019). Each item is rated on a 5-point Likert-type scale (from 0 =

“not true at all” to 4 = “true nearly all the time”), total scores range between 0 to 100 where higher scores indicate a stronger degree of resilience.

4. Response Styles Scale

Caregivers' level of rumination was assessed by the Ruminative Responses Scale (RRS), which is a subscale of the Response Styles Questionnaire (RSQ). The tool was developed by Treynor, Gonzalez & Nolen-Hoeksema, 2003 in an English language and translated to Arabic language by the researcher, it includes 22 items that describe the response to psychological symptoms that arise from stressful situations: Each item is rated on a 4-point Likert-type scale (from 1 = “almost never” to 4 = “almost always”). It composed of three dimensions, which are brooding, reflection, and depression-related. In this study, the Cronbach's alpha of the scale was 0.87 (for the whole scale).

In addition, a structured questionnaire on an Arabic language aiming at obtaining caregivers' personal and caregiving- data was developed by the researcher and utilized in this study (e.g. age, sex, relation with the psychiatric patient).

Reliability:

1. Metacognitive Beliefs Questionnaire

Test-retest analysis was examined for the total score, results of intra-class correlations were mostly good to excellent (range 0.72–0.95).

2. Involvement Evaluation Inventory

Inventory was assessed for its internal consistency, and it was as follows: tension: 0.91; supervision: 0.81; worrying: 0.79; urging: 0.89. Furthermore, Reliability was tested using Cronbach's α , intraclass correlation coefficients and standard error of measurement of the IEQ items and it was: 0.93.

3. Connor and Davidson Resilience Scale

The Cronbach's alpha of the CD-RISC in this study was 0.81.

4. Response Styles Scale

The Cronbach's alpha of the scale was 0.87 (for the whole scale).

Validity:

All translated questionnaires and scales into an Arabic language were validated by a jury of five professional psychiatric nursing specialists.

II. Operational design

Preparatory phase:

It includes reviewing related studies, various researches about different variables as well as utilizing books, research articles, the internet, periodicals and magazines.

The pilot study:

A pilot study was performed on 5 % (n= 25) of caregivers before the start of the actual study. It was carried out to investigate the applicability of study tools and to estimate the appropriate time needed for answering the tools. No modifications were done to the tools.

Field work:

The researcher interviewed caregivers individually in the nurses' room after permission of the responsible manager. The researcher collected data in outpatients' clinics for five months, three days a week. Data obtained from the beginning of September 2021 and until the beginning of January 2022. Structured interview method was followed in this study; to ensure patients' disclosure of data as well as to communicate and convey confidentiality. Then, the researcher met the participants in an individual basis and caregivers' consent was taken while the aim of the study and the mechanism of data collection were explained. Participants were also informed that their answers will not be evaluated to be either true or false. Further, the researcher read the scales' and questionnaires' questions on a local language and provided caregivers with time to answer and record/ mark their answers. Moreover, the researcher took notes for caregivers' comments and abeyances. After completion of the tools, the researcher thanked the caregiver for his/her precious participation and ensured that data will be used only for the purposes of the study.

Administrative Design:

Prior study, an official letter from the Dean of the Faculty of Nursing was sent to the Director of Port Said Psychiatric Health Hospital to obtain the permission for conducting the present research with an explanation of the study objectives and plan for data collection.

Ethical considerations:

- a. The researcher obtained approval from the Ethics Committee of the Faculty of Nursing, Port-Said city (NUR (3-7-2022) (15)).
- b. The objectives of the research were declared to the Director of the hospital to obtain the needed permission.
- c. Informed consent was taken from all participants after explaining the purpose of the study.
- d. The researcher assured caregivers that they have the right to withdraw from the study at any time.
- e. The researcher enclosed the anonymity and confidentiality of the information procured.

IV. Statistical design

Statistical analyses were carried out using SPSS 20.0. Categorical variables were labeled using numbers and percentages while continuous variables were showed using mean and standard deviation. Since the study aimed to explore the relationship between caregivers' maladaptive metacognitive beliefs and burden, the first part of the analysis involved computing Pearson's correlations.

In order to assess the complex models including mediators and moderators, the researcher used the SPSS macro PROCESS, to analyze data; the researcher performed a mediation analyses based on the exhorted criteria defined by Preacher & Hayes, 2008. In this approach, mediation is significant if the upper and lower bounds of confidence intervals do not contain 0 (Efron & Tibshirani, 1993).

Hierarchical multiple regression analysis was used to reconnoiter the moderating role of resilience on the association between metacognition and burden. All variables correlated with metacognition and burden in univariate analysis ($P < 0.05$) were entered into the hierarchical multiple regression model. The moderating effect of resilience was supported if the interaction was significant, and simple slope analysis was conducted to visualize the interaction term (Li, Zhang, Shi, Guo & Wang, 2019). The variables in the model were centralized before regression analysis was conducted.

Additionally, to test the significance of the mediation effect of rumination on the relationship between caregivers; metacognitive beliefs and burden, this study conducted the Sobel test (Sobel, 1982), which indicated that when the probability of error is less than 5% ($p < 0.05$), results were considered significant, but if it is less than 0.1% ($p < 0.001$) the relations supposed to be highly significant.

RESULTS

Table (1) : presents the personal data of the participants, as the table shows, more than half of the caregivers (57.1%) aged between 45 to less than 50 years old and 24.7% were aged between 50 to less than 55 years while almost three quarters (72.9%) were female participants. Almost three quarters (77.4%) of the caregivers were mothers and only 15.2% were spouses, in relation to level of education; almost two thirds of the participants (66.7%) were illiterate compared to 14.1% with a university level. Regarding the caregivers' occupation, the results revealed that 18.7% were housewives and 2.2 were unemployed male participants. Finally, almost two thirds of caregivers (63.5%) reported that their monthly income was insufficient.

Table 2 : illustrated data reflecting the caregiving role of the participants and presented that 60.6% gain their social support through their closed family and 11.9% acquired it through other family members such as uncles and aunts. In relevance to the financial support, almost all of the caregivers (98.1%) said that they did not receive any financial support for their patients. On the other hand, all the participants (100.0%) admitted to receive therapeutic help from the hospital through their follow up visits and 93.5% of them said that it is effective for them. Moreover, 68.3% of caregivers stated that they have another sick member within the family and 4.4% of these members have psychiatric disorders such as intellectual disabilities or autism. When the researcher inquired about participants' perception of the caregiving burden, almost all of the participants (98.5%) proclaimed that they feel physical and psychological encumbrances related to their roles as caregivers. Eventually, almost half of the participants (48.2%) declared to spend more than 5 years in caring with their sick person.

Precursory/ preliminary analysis of the studied variables

Initially, data was investigated for its normality, with a critical assumption underlying the asymptotically distribution-free procedure being used in the analysis and all results

assured univariate normality for all studied variables. Then, data was examined for skewness, kurtosis and outliers by visual inspection of histograms and scatterplots, and they were symmetrically distributed and without outliers. Means, standard deviations and range of the maladaptive metacognitive beliefs domains were explicated in table 3 and the highest mean score observed in beliefs about need to control thoughts (23.97 ± 3.00) followed by cognitive consciousness (23.10 ± 2.98), while the overall mean score was (111.242 ± 3.10).

Table (3): also displayed the means, standard deviations and range of the burden domains, and as presented, the highest mean score observed in the tension subscale followed by urging (35.12 ± 1.99 and 29.10 ± 1.91 respectively) and the average scale mean score was 110.152 ± 2.99 .

Correlation analysis

Table (4): declares a highly statistical significant positive correlation between maladaptive metacognitive beliefs and burden among the caregivers. Furthermore, when assessing the caregivers' personal and caregiving role –related data in conjunction to the dependent and independent variables, results showed that there were high statistical significant positive correlations between maladaptive metacognitive beliefs of the participants and their sex, occupation, family income, social support, presence of other sick family member and length of illness. On the same context, caregivers' burden was also correlated significantly and positively with caregivers' data such as sex, level of education, financial support and length of the caregiving role.

Moderation analysis

Table (5): in order to test the moderating effect of psychological resilience on the relationship between maladaptive metacognitive beliefs and burden, the researcher utilized A PROCESS analysis, and results revealed that when controlling the resilience and rumination; the standardized regression coefficient (β) of “resilience \times rumination” remained highly significant. On this context, it is also observed that (β) of “resilience \times metacognitive beliefs” is highly significant while controlling the caregivers' burden and rumination levels.

Figure 1: for further analysis, the researcher obtained the simple slope analysis and conditioned at one SD above and below the mean; and the results indicated that the effect

of metacognitive beliefs on caregivers' level of burden is moderated by their resilience; as if resilience decreased; the metacognitive beliefs and burden is increased.

Mediation analysis

In respect to objective 3 of this study, which ask if rumination has a mediating effect on the relationship between caregivers' maladaptive metacognitive beliefs and burden; the researcher also utilized A PROCESS proceeding analysis. The analysis proved that when proposing that dysfunctional metacognitive beliefs and rumination are predictors for burden, the effect correlation were both significant. This finding elucidated that, rumination statistically and significantly mediates the effect of participants' metacognitive beliefs on their caregiving burden. **Table (6)** describes these findings and **figure (2)** illustrates the proposed conceptual model for these relationships.

Table (1): Personal characteristics of caregivers of the psychiatric patients (n= 493).

Personal characteristics	Frequency N= (493)	%
Age (in years)		
less than 40	16	3.3
40- less than 45	65	13.3
45-less than 50	282	57.1
50- less than 55	122	24.7
55 and more	8	1.6
Sex		
Male	134	27.1
Female	359	72.9
Relationship with the patient		
Spouse	75	15.2
Father	30	6.2
Mother	382	77.4
Siblings	6	1.2
Other (e.g. Cousins)	0	0.0
Level of education		
Illiterate	329	66.7
Basic	10	2.0
Secondary/ institute	85	17.2
University	69	14.1
Occupation		
Unemployed	11	2.2
House wife	92	18.7
Practical / handmade / seller	208	42.3
Technical Worker	106	21.4
Professional	67	13.5
Desk worker	9	1.9
Monthly Family income (as caregiver reported)		
Sufficient	10	2.1
Moderately sufficient	170	34.4
Insufficient	313	63.5
Caregivers' disease or illness		
None	0	0.0
Physical illness (e.g. D.M, HTN)	493	100.0

Table (2): Data related to the caregiving role of the participants (n= 493).

Caregiving role of the participants	Frequency N= (493)	%
<i>Social support related to patient's condition</i>		
Close Family members	299	60.6
Family	59	11.9
Neighbors	69	14.1
Friends	63	12.7
Governmental institutions (e.g. social solidarity)	3	0.7
<i>Financial support related to patient's condition</i>		
Yes	9	1.9
No	484	98.1
If yes, is it enough? (N=29)		
Yes	0	0.0
No	493	100.0
<i>Therapeutic support for the caregivers</i>		
Yes	493	100.0
No	0	0.0
If yes, Is it effective for you?		
Yes	461	93.5
No	32	6.5
<i>Other sick family member</i>		
Yes	337	68.3
No	156	31.7
If yes, what is the diagnosis? (n= 1019)		
Medical diagnosis	471	95.6
Psychiatric diagnosis (e.g. intellectual disabilities)	22	4.4
<i>Burden as explained by the caregivers</i>		
Physical	3	0.7
Psychological	4	0.8
Both	486	98.5
<i>Length of the caregiving role</i>		
6 months - 1 year	3	0.7
1 to less than 2 years	24	4.8
2 to less than 3years	90	18.2
3 to less than 4years	39	7.9
4 to less than 5 years	100	20.2
More than 5 years	237	48.2

Table (3): Descriptive statistics of caregivers’ Metacognitive Beliefs Questionnaire subscales and the Involvement Evaluation Questionnaire (Burden Dimensions subscale).

Variables	Mean	SD	Range
Metacognitive Beliefs Domains			
Positive beliefs about worrying	21.983	3.1243	6-24
Negative beliefs about worry concerning uncontrollability and danger	19.654	3.0241	6-24
Cognitive confidence	22.531	2.9921	6-24
Beliefs about need to control thoughts	23.973	3.0000	6-24
Cognitive consciousness	23.101	2.9817	6-24
Overall caregivers’ metacognitive beliefs score	111.242	3.1011	30-120
IEQ -Burden Scale Dimensions			
Tension (9 items)	35.123	1.9999	0-36
Supervision (6 items)	22.910	2.9421	0-24
Worrying (6 items)	23.012	2.9410	0-24
Urging (8 items)	29.107	1.9167	0-32
Overall caregivers’ burden score	110.152	2.9902	0-116

IEQ= Involvement Evaluation Questionnaire

Table (4): Correlation between the caregiving’-related data and maladaptive metacognitive beliefs and burden among psychiatric patients’ caregivers

Variables	1	2	3	4	5	6	7	8	9	10	11	12
Caregivers’ metacognitive beliefs	-											
Caregivers’ level of burden	0.239**	-										
Sex	0.579**	0.521**	-									
Level of education	-0.121*	-0.554**	0.323	-								
Occupation	0.650**	0.202*	0.18*	0.129*	-							
Family income	-0.915**	-0.819**	0.748	0.354**	0.654**	-						
Social support	-0.876**	-0.965**	0.982*	0.746*	0.806**	0.835**	-					
Financial support	-0.620*	-0.712**	0.769	0.575	0.330**	0.634**	.812*	-				
Other family ill member	0.426**	0.381**	0.151*	0.241*	0.123	0.457**	-0.394*	0.771**	-			
Length of the caregiving role	0.746**	0.806**	0.553*	0.418**	0.194	0.254**	0.346*	0.531**	-0.485*	-		
Length of illness	0.179**	0.616**	0.198*	0.639**	0.534	0.597**	0.916*	0.840**	0.198*	0.591*	-	
Contact days for treatment	0.912**	0.328**	0.199*	0.612*	0.712*	0.822**	0.931*	0.634**	0.544*	0.598*	0.198**	-

* p<0.05, ** p<0.01

Table (5). Regression analysis of the moderating effect of caregivers' psychological resilience

Regression		Significance of regression analysis			
Dependent variable	Independent variable	β	LLCI	ULCI	t
Burden	Resilience	-0.22	0.12	0.24	-6.07**
	Rumination	0.04	-0.01	0.16	0.74 **
	Resilience X Rumination	-0.03	-0.09	0.16	-11.94**
	Length of caregiving role	0.10	0.05	0.09	0.32
	Contact days	0.15	0.01	0.12	0.65*
Burden	Resilience	-0.21	0.06	0.20	-5.62**
	Metacognitive beliefs	0.12	0.04	0.18	2.73**
	Resilience X Metacognitive beliefs	-0.15	0.11	0.16	-9.55**
	Support	0.09	0.02	0.09	0.51*
	Length of caregiving role	0.05	-0.01	0.04	0.81*
	Contact days	0.17	0.09	0.14	0.77

n = 1493. *P < 0.05, **P < 0.01. Continuous variables were centered at its means. LLCI, lower level for confidence interval; ULCI, upper level for confidence interval.

Table (6). Multiple regression analyses of the mediating effect of participants' rumination

Regression		Significance of regression analysis			
Dependent variable	Independent variable	β	LLCI	ULCI	t
Burden	Metacognitive beliefs	0.22	0.12	0.24	6.07**
	Sex	0.04	-0.01	0.16	0.54
	Support	0.03	-0.09	0.16	0.94
	Length of caregiving role	0.10	0.05	0.09	0.32
	Contact days	0.15	0.01	0.12	0.65*
Rumination	Metacognitive beliefs	0.58	0.52	0.62	20.32**
	Sex	0.17	-0.02	0.13	0.82
	Support	-0.09	-0.03	0.11	-0.73*
	Length of caregiving role	0.08	0.01	0.10	0.62*
	Contact days	0.03	0.02	0.13	0.86
Burden	Rumination	0.21	0.06	0.20	5.62**
	Metacognitive beliefs	0.12	0.04	0.18	2.73**
	Sex	0.15	0.11	0.16	0.55*
	Support	-0.09	0.02	0.09	-0.51*
	Length of caregiving role	0.05	-0.01	0.04	0.81*
	Contact days	0.17	0.09	0.14	0.77*

n = 1,065. *P < 0.05, **P < 0.01. Continuous variables were normalized. LLCI, lower level for confidence interval; ULCI, upper level for confidence interval.

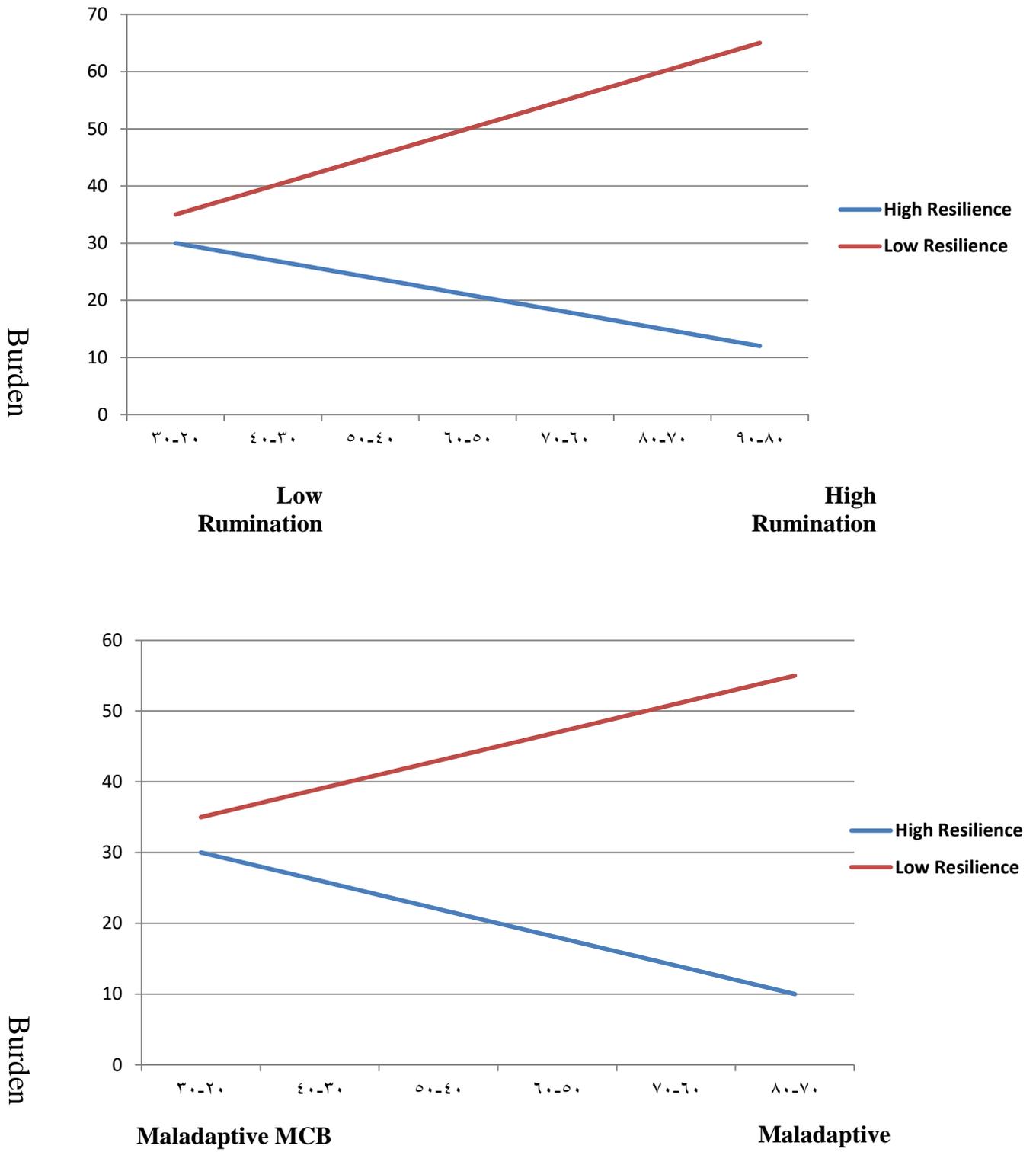


Figure 1. Simple slope analyses of the moderating effect of psychological resilience.

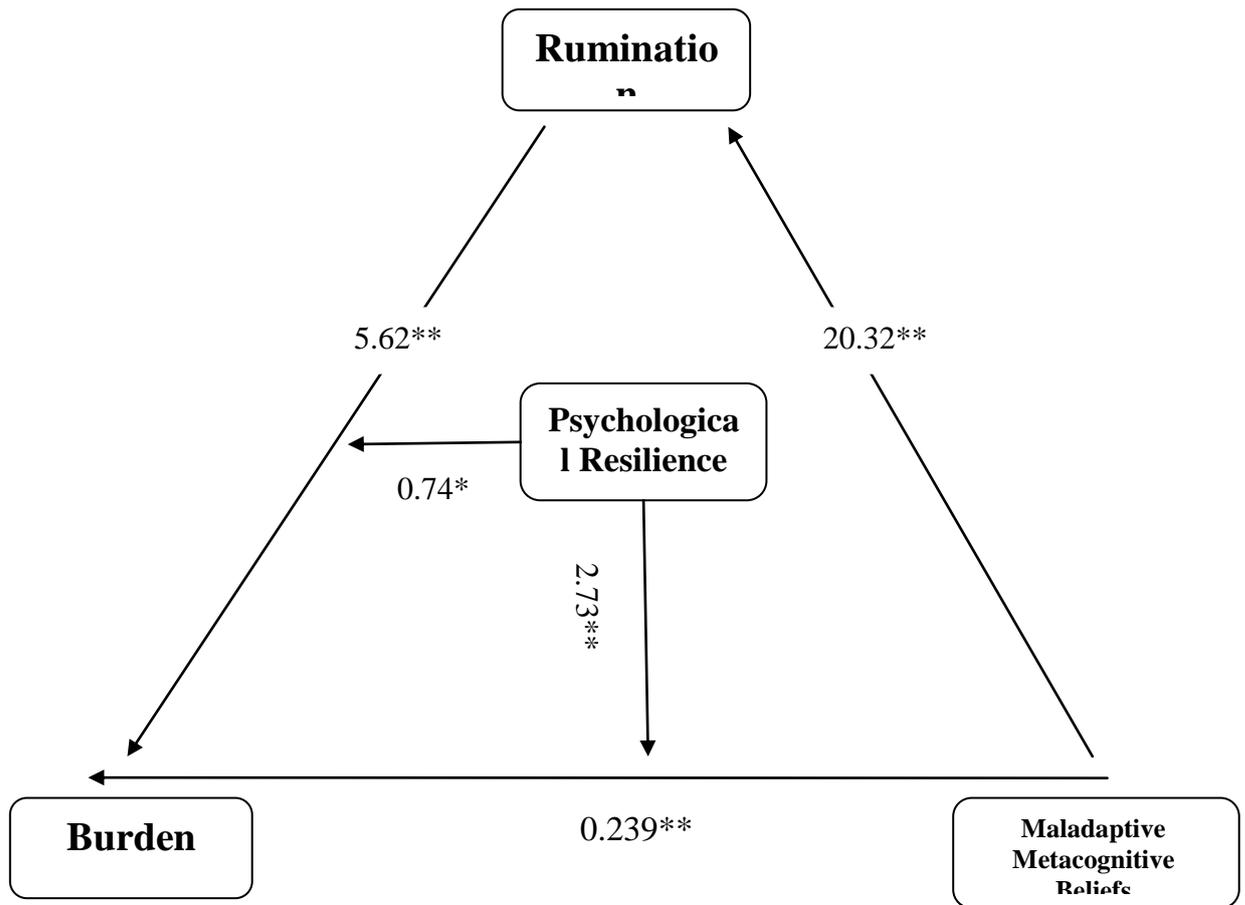


Figure: 2. Conceptual

DISCUSSION

Psychiatric patients' caregivers are predominantly susceptible to high risk for developing emotional burden, particularly in relation to the extent of patient's behavioral and psychiatric symptoms and dependence. Burden can be perceived either physically or psychologically; with prejudicial effects on persons' quality of life, it can affect the delivery of care and hinder the caregiving role. Assorted studies assessed level of burden among psychiatric patients' caregivers and related it with social and personal factors, but scarce researches investigated the cognitive and behavioral attributes with burden such as metacognitive beliefs.

Metacognition acts as an internal guide that helps persons to recognize their own thoughts and consequently take action; it can be either helpful or a hindrance; as maladaptive metacognition can negatively impact person's appraisal style, ability to cope and perceptive situations, it can be also a predictive factor involved in the development of several psychological problems. This study aimed to explore the relation between burden and maladaptive metacognitive beliefs among caregivers with psychiatric patients; while assessing the effects of psychological resilience and rumination on this relation.

Initially, this study scrutinized the relation between maladaptive metacognitive beliefs and burden and deduced that caregivers' with maladaptive metacognitive beliefs experienced more level of burden. This can be explained by the S-REF (self-regulatory executive function) model, as it proposed that burden and distress can become persistent when conserved maladaptive metacognitive beliefs escort individual to respond to commonly occurring thoughts and feelings in certain directions. This can be also explained by this study results which indicated high mean scores of negative and maladaptive metacognitive beliefs of caregivers such as the positive belief to worry (e.g. Worrying helps me cope), beliefs about the uncontrollability and danger of worry (e.g. I cannot ignore my worrying thoughts) and beliefs about need to control thoughts (e.g. I cannot stop worrying); these beliefs are theorized to both directly and indirectly cause and sustain burden; this is because these beliefs are distressing and decrease the likelihood of disengaging from repetitive negative thinking due to beliefs that thinking cannot be controlled.

The study of Jansen et al, (2015) who explored the association between metacognitive beliefs and emotional distress in caregivers' with first- episode psychosis

patients agreed this result and reported that “metacognitions contribute to distress by inducing persons to engage in coping strategies that are somewhat unhelpful and counterproductive”. Moreover, other studies carried out on caregivers’ with medically ill patients supported this result, such as the study of Lenzo et al. (2020) on amyotrophic lateral sclerosis caregivers and Ağaç and Özçetin (2021) on cancer patients’ caregivers, as they concluded in their studies that dysfunctional metacognition significantly associated with emotional and psychological distress.

One of the eminent results in this study is the caregivers’- related data which correlated statistically with maladaptive metacognitive beliefs and burden. Sex was one of these factors with high correlation observed in female caregivers. This may be linked with the assumption that women work more hours in caregiving, perform heavier manual caregiving tasks, have fewer opportunities for respite, and have fewer social interactions and leisure activities. All these factors increase the burden of care, and consequently influence their rationales and thought process; they may lean towards retaining negative and erroneous beliefs regarding their abilities in coping with stressors. This study result was consistent with the results of Mathias, Kermode, San-Sebastian, Davar and Goicolea. (2019) who assessed the “experiences of men and women as caregivers of people with psycho-social disabilities in rural North India” and confirmed that women have greater burden than men.

Another factor related to the caregiving role is the support either it was a social or a financial. Limited and insufficient support was correlated positively with dysfunctional metacognitive beliefs and burden among the caregivers. Indeed, support is exceptionally intrinsic for maintaining a good physical and mental health. Caring of a psychiatric patient is a stressful experience and presence of a benevolent social network and a sufficient income can alleviate the impact of the negative consequences of this experience on caregivers’ physical and psychological wellbeing, and further enhance their abilities for coping and adaptation. This result is in congruence with the study of Abdelaal, Eita and Khedr (2021) who assessed the “level of resilience and perceived social support among family caregivers of patients with schizophrenia” and declared that caregivers with highly perceived social support have more resilience and coping abilities which enable them to for their caregiving role appropriately. Different studies supported this

result as the studies of Lakzaei et al, (2015), Raj, Shiri ; Jangam (2016) ; Salim, Borhani, Pour and Khabazkhoob (2019).

Increase in the length of illness or contact days with hospital seeking for treatment and medication were highly and positively correlated with maladaptive metacognitive beliefs and burden. That is a plausible and reasonable result, as the time of illness increase, patients' demands and needs increased, caregivers' level of emotional distress increases and financial and social resources dwindled. This result was supported by other studies (Adib-Hajbaghery & Ahmadi, 2019; Arun, Inbakamal, Tharyan & Premkumar, 2018; Chen et al, 2019; Leng, Xu, Nicholas & Wang, 2019; Rahmani, Roshangar, Gholizadeh & Asghari, 2022; Souza et al, 2017). But the study of Yazici et al, (2017) who investigated the correlates of burden among caregivers' with schizophrenic patients in India contradicted this results, and revealed that there were no statistical relationship between burden and length of illness, they assumed that as the duration increase; the disease stabilize and caregivers learn to cope appropriately.

One of the considerable results in this research is that caregivers' level of psychological resilience moderate the relation between their maladaptive metacognitive beliefs and burden. It is well documented that enhancing caregivers' resilient coping styles reduces the distress contributed with illness-related changes in the physical, psychosocial and spiritual dimensions of caregivers' quality of life. A resilient coping style can diminishes the risk of stress and burden, promote adaptation and adjustment and enables caregivers to perceive their traumatic experiences in the caring process as less stressful. This result was supported by the studies of Hassnin and Eita. (2021); Li et al, (2019b); Su, Liu, Li and Chen. 2020 and Üzar-Özçeti and Dursun. (2020). On the same context Ağaç and Üzar-Özçetin. (2022) assessed the effect of psychological resilience, metacognitions and fear of recurrence in cancer patients and their caregivers; and stated that "psychological resilience negatively predicted the fear of recurrence, whereas the metacognitions positively predicted the fear of recurrence in cancer survivors".

Eventually, this study shed the light on the mediating effect of rumination on the relationship between caregivers' maladaptive metacognitive beliefs and burden. Higher levels of deliberate rumination strengthened the negative correlation between psychological resilience and burden as well as the positive correlation between the

maladaptive metacognitive beliefs and burden. This is an influential result that may be explained that caregivers with more rumination about psychiatric illness may react with more avoidant coping responses, experience more encumbrances, overwhelmed in their stress and wondering about causes and responsibilities which would result in development of maladaptive metacognitive beliefs and perception of high levels of burden.

For further explanation, Yuanyuan and Chen (2021) agreed this result through their study for how rumination predicted ineffective coping and stress. They mentioned that caregivers with ideas such as catastrophic appraisals and worrying thoughts regarding burden, their maladaptive metacognitive thoughts or behaviors could increase. Rumination leads caregivers to escape from the reluctant events, provides them excuses for dysfunctional beliefs and actions, enable them to withdraw from their responsibilities of caring and gradually, it would negatively impacts patient's quality of life and prevented the caregivers from searching for possible solutions and treatments which further exacerbates and prolongs caregivers' stress and anxiety. On the same context, other studies supported this result as the study of Calvete et al, (2021); Esbjørn, Normann, Christiansen, and Reinholdt-Dunne, (2018) ; Öcalan, and Üzar-Özçetin (2021).

CONCLUSION

The results suggest that maladaptive metacognitive beliefs are a positive predictor of caregivers' burden. Further, caregivers with greater psychological resilience adopt less maladaptive metacognitive beliefs and experience lesser burden than those with less psychological resilience. Last, caregivers' level of deliberate rumination moderates the mediating process, particularly at the stage where burden and dysfunctional metacognitive beliefs are associated with psychological resilience.

RECOMMENDATIONS, LIMITATIONS AND FUTURE IMPLICATIONS AND STUDIES

These new evidences could reveal how maladaptive metacognitive beliefs influence psychological burden and provide enlightenment for the controlling related risk factors. Given consideration to this significant influence, health care providers should pay

attention to caregivers' burden levels. Methods of reducing burden can assist to create a supportive environment and improve caregivers' coping and adaptation. In addition, this study suggested that rumination worsens sleep quality in those suffering from stressful life events. Hence, interventions like mindfulness training and stress management techniques and coping abilities enhancement are recommended.

Caregivers' cognitive evaluation of the caring experiences was measured through metacognition assessment, revealing that caregivers have high level of maladaptive beliefs regarding caregiving role; thus, positive reevaluation training and cognitive restructuring programs would be salutary and profitable for those caregivers. Lastly, while considering that resilience and rumination acts as buffers/ mitigates between maladaptive metacognitive beliefs and burden, it is feasible to decrease caregivers' level of burden and maladaptive metacognitive beliefs through improving psychological resilience level and decreasing ruminative thoughts and responses' styles.

Although this study data provides new evidence pertaining to the mediating effect of rumination and moderating effect of resilience on the relationship between maladaptive metacognitive beliefs and burden, results should be assessed with care to include the background of the limitations inherent in this study. First, *scarcity of studies*, as to the author's knowledge, researches on the relationship of metacognitive beliefs and burden among psychiatric patients' caregivers are lacking to date (inadequate literature for inferring mediation). Second, *data was collected at one point in time*, which may limits the conclusions regarding the causal order of relationships. Hence, the researcher may recommend a plan for a second wave of data collection in order to substantiate the causality of the studied variables.

Third, the data *obtained relied on participants' self-reports* for all variables in the model, which raises the concern of possible common method bias. However, the statistical analyses for this research declared that common method bias did not cause a major concern in the study. Therefore, future researches to collect data from multiple sources in order to investigate the findings further are also suggested.

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العلاقة بين معتقدات ما وراء الإدراك غير المعرفية والعبء بين مقدمي الرعاية للمرضى النفسيين: دور المرونة كمنسق و الاجترار كوسيط

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أستاذ مساعد التمريض النفسي- كلية التمريض جامعة بورسعيد

الخلاصة

المقدمة: يساعد مقدمو الرعاية للمرضى النفسيين في تقديم العديد من مهام الرعاية الطبية المساندة و المتزامنة لعلاج الأعراض المرضية والآثار السلبية للعلاج في المنزل ، مثل اعطاء الأدوية والرعاية الجسدية والدعم العاطفي، و للأسف قد تؤدي هذه المهام الى زيادة العبء لمقدمي الرعاية و من ثم تؤثر على صحتهم البدنية و النفسية. هدف الدراسة: فحص العلاقة بين المعتقدات وراء المعرفية والعبء بين مقدمي الرعاية للمرضى النفسيين مع دراسة دور الاجترار والمرونة في هذه العلاقة. منهجية الدراسة: أكمل أربعة مائة وثلاثة وتسعين من مقدمي الرعاية للأشخاص الذين يعانون من اضطرابات نفسية سلسلة من الاستبيانات (استبيان MCB ، -IEQ مقياس العبء ، استبيان أسلوب الاستجابة ومقياس المرونة. النتائج: كشفت تحليلات النماذج المختلطة الخطية أن المعتقدات ما وراء المعرفية تنبأت بشكل مستقل بزيادة عبء مقدمي الرعاية. علاوة على ذلك ، أظهر تحليل الوساطة أن الاجترار يمكن أن يكون وسيطاً في العلاقة بين المعتقدات غير المعرفية ومستوى العبء بين عينة الدراسة. الخلاصة: الدراسة الحالية هي الخطوة الأولى نحو فهم دور ما وراء المعرفة في عبء مقدمي الرعاية للمرضى النفسيين ، مع دراسة المرونة والاجترار كعوامل مؤثرة. التوصيات: يوصى الباحث ببعض التدريبات مثل تدريب اليقظة وتقنيات إدارة الضغوط وتعزيز قدرات المواجهة لمقدمي الرعاية للمرضى النفسيين.

الكلمات المرشدة : عبء مقدمي الرعاية ، معتقدات ما وراء المعرفة ، المرونة ، الاجترار.