

Interrelation between Defensive Mechanisms and Coping Strategies in Psychiatry Trainees in Romania: A Multi-Centric Study

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Primary research

Keywords: structural equation modeling, defense mechanisms, coping behavior.

Posted Date: June 30th, 2020

DOI: <https://doi.org/10.21203/rs.2.24057/v3>

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Version of Record: A version of this preprint was published on September 27th, 2020. See the published version at <https://doi.org/10.1186/s12991-020-00307-1>.

Abstract

Background: The challenges that a professional face when working in the field of psychiatry require the development of adequate defensive and coping styles. Our study aimed to explore both the coping strategies and defense mechanisms and their relationship among psychiatry trainees in Romania.

Methods: A cross-sectional study was conducted to determine and to evaluate both defensive and coping styles of Romanian psychiatry trainees. DSQ-60 and COPE scales were applied to psychiatry trainees from five training centers in Romania. By applying structural equation modeling, we studied models that presumed the existence of relationships between coping strategies and defensive mechanisms.

Results: The results of the study indicate that superior defense mechanisms and task-oriented coping style were the commonly used approach by trainees in psychiatry. Also, our findings show significantly consistent correlations (ranging from 0.2 to 0.5) between adaptive defense mechanisms and coping styles focused on the problem or the emotion. Similarly, the avoidant coping strategies correlated with non-adaptative defense styles (correlations between 0.3 and 0.5). Our model presented good fit indices, $X^2(34) = 64.324$, $p < 0.001$; GFI = 0.93; RMSE = 0.08. Moreover, the results indicated a weak association, $r = 0.07$, $p < 0.001$, between the two types of adaptive processes.

Conclusion: Our findings suggest that trainees in psychiatry present a profile based on two independent groups of adaptation processes, namely, adaptive defenses and problem-oriented coping scales, and non-adaptive defenses and avoidant coping scales.

Background

The relationship between coping and defense mechanisms is a subject of debate between specialists^{1,2,3}. The term 'defense mechanisms' was defined in 1926 by S. Freud in an attempt to explain how individuals manage stress⁴. Traditionally, defense mechanisms are patterns of relatively involuntary responses⁵ to external or internal factors and they involve feelings, thoughts and behaviours⁶. Coping mechanisms are conscious and purposeful processes² and they are based on cognition⁷. The concept of defense was hard to differentiate from coping as the two were frequently misused or their definitions overlapped². R.S. Lazarus suggests that coping and defense mechanisms must be studied together and therefore not limiting coping to deliberate and conscious processes⁸. The relationship between coping and defense mechanisms might explain the debate about these concepts and the misuse of terminology and confusion throughout literature.

Coping and defense mechanisms have been studied concerning different symptoms and disorders, such as depression, anxiety, or personality disorders⁹. The findings showed that coping and defense styles tend to have a certain pattern with these disorders and that certain mechanisms, like avoidant coping, might increase future symptoms¹⁰. This relates to the vulnerability-stress psychopathology model that outlines two underlying components¹¹. The internal component, vulnerability, is comprised of all

mechanisms and processes that arise and are non-adaptive. The external component, stress, is based on life events¹². The two influence each other, creating a threshold for disorders to arise¹³. The types of coping and defense mechanisms used may contribute to vulnerability, as previously mentioned, or they can be protective factors. In this regard, J.C. Perry and Carver et al. have proposed a hierarchy of seven levels of defense mechanisms¹⁴ and four strategies of coping¹⁵.

Evaluation of medical doctors' coping and defenses have not been frequently considered, although numerous studies are reporting high levels of burn-out in this profession^{16,17}, along with high rates of depression and suicide ideation among resident physicians and medical students^{18,19}. Psychiatry is a stressful medical field²⁰ and psychiatrists are prone to burn-out and even suicide^{21,22}. Younger psychiatrists tend to be more stressed than the older ones²³ and women more than men²⁴. A major stress factor is patients' suicide, younger psychiatrists being more affected than their senior colleagues^{21,23}. Other sources of stress are negative attitudes of patients and caregivers, administrative and management shortcomings, overload, and poor resources^{25,26}. Whilst emerging evidence has shown that debriefing after a traumatic event may not be of help for all patients^{27,28} or in all circumstances²⁹, despite this, it remains the standard procedure in many clinical settings. Hearing patients' traumatic history can also cause stress among clinicians³⁰. Regarding the influence of stress exposure on coping and defense mechanisms, some argue that it can either increase the risk of developing mental health issues^{31,32,33}, or it can facilitate the development of more efficient coping and defense mechanisms in certain circumstances³⁴.

We conducted an initial pilot study to explore both coping and defense mechanisms of psychiatry trainees in Romania³⁵. Based on this study, we more deeply explored the possible relation between coping and defense strategies as well as their implication in clinical practice. In Romania, twelve medical centers are in charge of conducting residency programs. The duration of training is of five years. All centers have the same curriculum in their psychiatric training program. Psychiatry trainees work in Psychiatry University Hospitals with rotations in the General Hospital. They work 35-hours per week, and a minimum of 24-hour of on-call duty per month is also required. They are assigned to a coordinator who supervises their performance. They are also assigned to a clinical supervisor responsible for the clinical activity. The main focus on psychiatrists' training is on patient care with no specific attention paid to psychiatrists' personal development. Also, no personal guidance is included in the training program. Moreover, there is no specific training in managing personal difficulties and improving self-care and self-development. In consequence, psychiatry residents are more vulnerable to burn-out, mental health issues, or psychiatric disorders.

Our study aimed to explore coping and defense mechanisms and their relation among psychiatry trainees in Romania. Having a better understanding of these mechanisms, resources can be redirected to the most effective interventions in regard to developing and maintaining protective factors against psychopathology. The exploration of the relationship between coping and defense mechanisms can offer practical guidance for future interventions.

Methods

Study sample

Romanian psychiatry trainees from five different training centers and different regions in Romania (Bucharest, Cluj-Napoca, Timisoara, Tîrgu Mures, and Sibiu) were invited to participate. Questionnaires were distributed with the help of the Romanian Psychiatric Trainees Association's national network. Local coordinators were involved in distributing and collecting the on-paper questionnaires based on their contact with local trainees.

The collection of data was conducted between March 2016 and September 2016. The inclusion criteria were being in a psychiatry training program in Romania, having Romanian nationality and agreement to complete the questionnaires. All participants were informed about the purpose of the study and the confidentiality of the collected data. No remuneration was offered.

We estimated a total of 604 active psychiatric trainees at the time of the study, 398 in the centers where we conducted the research. We did not take into consideration the possible dropouts from the training program, changes in specialty, or migration of trainees, which is one of the highest in Europe³⁶. A total of 133 questionnaires were collected. By selecting the ones that had a maximum of 3 questions with no response, 112 were included in the study. In the case of missing answers, the response was completed with the corresponding mean values.

Measurements

Participants were asked to fill in two self-assessment questionnaires that evaluate their coping styles: COPE¹⁵, a scale with 60 questions which explores 15 coping mechanisms and defense mechanisms and the Defensive Style Questionnaire, DSQ-60³⁷, a self-report measure with 60 questions which explores 30 defense mechanisms. We selected these scales because they offer some advantages in the assessment of adaptive mechanisms. COPE is the most used scale in this field and DSQ-60 assesses the defense mechanisms compatible with those included in the Diagnostic and statistical manual of mental disorders (4th ed.) (DSM- IV)³⁸. The two self-assessment questionnaires were translated, validated, and adapted for the Romanian population^{39,40}.

Assessing coping strategies

The COPE scale is comprised of 60 items graded on a Likert-type scale from 1 to 4, where 1 indicates "I usually don't do this" and 4 indicates "I often do this". The four coping strategies included¹⁵ are listed below:

- emotion-focused coping: positive interpretation and growth, restraint, and acceptance
- problem-focused coping: planning, active approach, and deletion of concurrent activities

- social support coping: social instrumental support, use of social-emotional support, and expression of feelings
- avoidant coping: denial and mental and behavioral deactivation.

The highest score recorded in these four coping styles was considered in this study to be the dominant and most representative for the patients investigated.

Assessing defensive mechanisms

The Defense Style Questionnaire-60 (DSQ-60) is a self-report measure to assess the 30 defense mechanisms included in the DSM IV³⁸. The questionnaire has 60 items which are evaluated using a 9-point Likert-type scale (1 – not at all applicable to me; 9 – completely applicable to me). The 7 levels of defense mechanisms^{14, 39} are the following:

- Action: help rejecting, complaining, acting-out and passive aggression.
- Major image distortion: projective identification, splitting of others and splitting of the self.
- Refusal to take responsibility: fantasy, rationalization, projection, and denial.
- Minor distortion of the image: devaluation of other, devaluation of self, self-idealization, and the idealization of the other, omnipotence.
- Neurotic: displacement, reaction formation, dissociation, repression.
- Obsessive: isolation of affect, intellectualization, and undoing.
- Adaptive: sublimation, suppression, self-assertion, self-observation, humor, anticipation, altruism, affiliation.

Statistical analysis

Data were presented as median (interquartile range) for continuous variables with non-Gaussian distribution, or absolute frequency (percentage) for categorical variables. Continuous variable distributions were tested for normality using the Kolmogorov–Smirnov’s test and for equality of variances by using Levene’s test.

For assessing the significance of the differences between groups, the Student’s *t*-test (means, Gaussian populations), Mann–Whitney *U* test (medians, non-Gaussian populations), and Pearson chi-square or Fisher’s exact test (proportions) were used. Using structural equation modeling, we studied models that assumed the existence of relationships between coping and defensive mechanisms.

We applied structural equation modeling (SEM) to overcome the problem of multiple hypotheses testing. The SEM approach is more appropriate when analyzing non-causal relationships, such as the relationships between coping and defenses. The SEM approach does not assume that one variable is a predictor for the other variables. Also, the SEM has the convenience of allowing for comparisons between complex models, such as models that assumed the existence of relationships between coping and

defenses, and models that assumed independence between these constructs. More exactly, we applied the SEM approach with the maximum likelihood estimation method. Moreover, we reported fit indices that are least influenced by the estimation method (the Goodness-of-Fit Index–GFI), or by sample size (the Root-Mean-Square Error of Approximation–RMSEA). For comparison purposes, we also reported the chi-square index and the Comparative Fit Index (CFI). Acceptable fit is indicated by values smaller than 0.08 for RMSEA and values higher than 0.90 for CFI. We considered that the two structural models were different when the ΔX^2 was statistically significant, and the difference between the CFI of the two models was larger than 0.01.

Data were analyzed by using the SPSS v.17 software (SPSS Inc., Chicago, IL, USA) and the R software packages (v.3.3) for statistical computing. A P -value < 0.05 was considered as the threshold for statistical significance. A confidence level of 0.95 was considered for estimating intervals.

Results

Sociodemographic characteristics

The socio-demographic characteristics of the sample are presented in Table 1. The number of participants who agreed to participate was 112. Participants were recruited from different training centers and regions in Romania: Bucharest, Cluj-Napoca, Timisoara, Tîrgu Mures, and Sibiu. The average age for the lot was 27 (26 - 30) years, and there were 71 females (63.4%), with an average period of work in the field of 7 (3 - 42) months. Most of the residents were in the first year (38.4%), while 27.2% and 20.2% of the residents were in the fourth and third years, respectively.

Table 1. Socio-demographic characteristics of the participants

Number of participants	112
Age [years] ^(a)	27.0 (26.0 - 30.0)
Gender (female) ^(b)	71 (63.4%)
Citizenship ^(b)	
Romanian	110 (98.2%)
Other	2(1.8%)
Education ^(b)	
Bachelor's degree	108 (96.5%)
Master's degree	3 (2.6%)
PhD	1 (0.9%)
Year of residency ^(a)	2 (1 - 4)
Experience in psychiatry [months] ^(a)	24 (7 - 41)
Civil status ^(b)	
Married	32 (28.6%)
Unmarried	70 (62.5%)
Single	4 (3.6%)
Cohabiting partnership	6 (5.3%)
Number of children ^(a)	
None	94 (83.9%)
One	14 (12.5%)
Two	4 (3.6%)
Working period [months] ^(a)	7 (3 - 42)
Religion ^(b)	
Orthodox	86 (76.8%)
Catholic	5 (4.5%)
Greco-catholic	1 (0.9%)
Reformed	3 (2.7%)
Agnostic	2 (1.8%)
Independent	1 (0.9%)
Atheist	5 (4.4%)
Undeclared	9 (8.0%)

(a) Continuous variables (with non-Gaussian distribution) are indicated by their median (interquartile range-IQR).

(b) Categorical variables are presented by absolute frequency and percentage in the sample.

More than half of the participants were unmarried (62.5%) and without children (83.9%). Also, we observed that more than half of the participants had a Christian orthodox religion (76.8%).

Table 2 presents the description of all the coping strategies with problem-focused and emotion-based coping styles having a median of 36 (33 – 40), and 51 (47 – 56), respectively.

Table 2. Description of coping strategies.

Coping style	Median	25%	75%	Minimum	Maximum
Problem-focused	36	33	40	22	48
Emotion-focused	51	47	56	31	74
Social support	32.5	29	37	17	46
Avoidant	27	24	31	17	44

The dominant coping style was 'problem-focused' for almost half of the participants (46.1%). The emotion-focused coping style was the dominant coping style for 26.3% of the participants, while for 25% of the participants; the dominant coping style was social support. A percentage of 2.6% of the participants used avoidance-type coping as their dominant coping style.

Table 3 includes a description of the defensive mechanisms for both adaptive and non-adaptive strategies. Superior adaptation has a median of 95 (86 - 105), while mental inhibition and minor distortion presented a median of 52.5 (41 – 63) and 20 (15 - 26.5), respectively.

Table 3. Description of defensive mechanisms

Defensive mechanism	Median	25%	75%	Minimum	Maximum
Superior adaptation	95	86	105	61	129
Disavowal	23	19.5	28	10	52
Mental inhibition	52.5	41	63	28	92
Major distortion	21	14	28	8	51
Minor distortion	20	15	26.5	8	43
Action	27.5	22	36	10	59

We observed significantly consistent correlations (ranging from 0.2 to 0.5) between adaptive defense mechanisms and coping focused on the problem, on the emotion, or on seeking social support. Firstly, a positive significant correlation between superior adaptation and problem-focused coping style (Spearman's $r = 0.381$, $p < 0.01$) was observed. Also, we noticed a positive significant correlation between superior adaptation and emotion-focused coping (Spearman's $r = 0.266$, $p < 0.01$), as well as social support coping (Spearman's $r = 0.255$, $p < 0.01$). Also, the superior adaptation mechanism negatively poorly correlated with avoidant coping strategy (Spearman's $r = -0.091$, $p = 0.338$) (Table 4).

The avoidant coping strategies correlated with defense styles that are not adaptive (correlations between 0.2 and 0.5). More exactly, we observed a positive significant correlation between major distortion and avoidant coping style (Spearman's $r = 0.420$, $p < 0.001$), between mental inhibition and avoidant coping style (Spearman's $r = 0.415$, $p < 0.001$), and between action and avoidant coping style (Spearman's $r = 0.410$, $p < 0.001$).

Another positive significant correlation was found between major distortion and social support coping mechanisms (Spearman's $r = 0.222$, $p = 0.019$), as well as minor distortion and social support coping mechanisms (Spearman's $r = 0.202$, $p = 0.033$). On the contrary, disavowal and mental inhibition were not significantly correlated with the social support coping style (Spearman's $r = 0.163$, $p = 0.086$; and Spearman's $r = 0.143$, $p = 0.134$, respectively). Also, disavowal, mental inhibition, major and minor distortion were not significantly correlated with problem-focused coping neither with an emotion-focused coping strategy.

Table 4. Correlations between defensive mechanisms and coping strategies

Parameters	Problem-focused	Emotion-focused	Social support	Avoidant
Superior adaptation	0.381**	0.266**	0.255**	-0.091
Disavowal	0.027	0.059	0.163	0.191*
Mental inhibition	0.035	0.109	0.143	0.415**
Major distortion	-0.158	-0.112	0.222*	0.420**
Minor distortion	0.057	0.098	0.202*	0.277**
Action	-0.070	-0.069	0.198*	0.410**

*significant correlation at 0.05 level

** significant correlation at 0.01 level

We grouped coping and defense mechanisms into two types of adaptive processes: one type of adaptive processes includes mature (or well adaptive) defenses and all forms of active coping (focused on the problem, focused on emotion or focused on seeking social support); the other type includes non-adaptive defense mechanisms and avoidant coping (Figure 1).

Our model presented good fit indices, $X^2(34) = 64.324$, $p < 0.001$, GFI = 0.93, RMSE = 0.08. Moreover, the results indicated a very weak association, $r = 0.07$, $p < 0.001$, between the two types of adaptive processes. Correlation values close to zero were found between avoidant coping and adaptive defense mechanisms, and between non-avoidant coping (problem-focused, emotion-focused) and non-adaptive defenses.

Discussion

Our research aimed to investigate the relationships between coping strategies and defense mechanisms among psychiatry trainees. We have found that the dominant coping style was a problem-focused strategy followed by emotion-focused coping and social support styles. The dominant defense mechanism was a superior adaptation, followed by mental inhibition and minor image distortion. We also observed a positive and significant correlation between superior adaptation and problem-focused coping style as well as between superior adaptation and emotion-focused coping. The avoidant coping strategies correlated with defense styles that are not adaptive, respectively with major distortion. Another positive significant correlation was found between major distortion and social support coping strategies. Major distortion negatively correlated with emotion-focused coping. Based on these findings, we observed that these adaptive processes are grouped into two different categories, corresponding to different psychiatry residents' profiles.

The gender shift in the medical profession^{41,42} may explain why more than half of our participants women were about 63.4%. Factors like female gender^{43,44} and unmarried (62.5%) status⁴⁵ are considered by many studies as factors of vulnerability for mental health while having no children (83.9%) protects the subjects from the potential stress of parenthood⁴⁵. This can also suggest a life trajectory in the medical profession that involves many years dedicated to professional development and less time dedicated to personal life⁴⁶.

The residents' experience in psychiatry was between 6-48 months, allowing the supposition that the job involved in changing the structure of coping and defense strategies was limited.^{47,48,49} Trainees used mature defense mechanisms. Some studies found that this is less common in a younger age group and more common in the over 40 years of age group⁵⁰. Younger psychiatrists tend to use better defense strategies but are more likely to feel more stressed than their elder colleagues⁵¹. The general population seems to have more mature strategies with age⁵². The very nature of work undertaken by psychiatrists can likely be a cause of vulnerability to stress, generating change in defense and coping^{23, 51, 53}. Stressful events can induce regression to inferior defensive styles and coping^{54, 55, 56}. This population might have an atypical age-related evolution in the use of coping and defense mechanisms that needs further inquiries.

Problem-focused coping style was associated in several studies with positive emotional well-being in different organisations^{57, 58, 59, 60} while emotion-based coping may be a factor in the emotional strain of a person^{59, 60}. Coping efficacy depends on many factors like personal and organizational and not only on the type of coping strategy used^{61,62,63}. Although problem-focused coping is reported as being superior to emotion-focused coping, both functions are usually used together in the same process, in different degrees⁶⁴. Affect and cognition are not separated and are usually used together in executive functions like decision making. This may explain the correlation of both coping strategies with superior adaptation.

Management should take into consideration these findings when planning psychological interventions for personnel. Psychological support and personal development should be encouraged especially when facing stressful events, such as patient suicide, so that the adaptative response to stress be maintained career-long.

Results also suggest that coping and defense mechanisms could be grouped into two types of adaptive processes. Starting from these observations, we tested a model that assumed the existence of two types of adaptive strategies. We used the composite score for each of Carver's four types of coping¹⁵ and the composite score for each of Perry's seven defense levels¹⁴.

Based on the correlations found, we can suggest that adaptive defense mechanisms imply coping focused on the problem, on emotion or on seeking social support with a stronger probability of problem-focused coping style, while excluding avoidant coping strategy. Major distortion mechanism has a good probability of implying avoidant coping style or social support coping mechanisms, but not an emotion-focused coping strategy. This paper sustains the grouping of the adaptive processes proposed by L.P. Maricutoiu & D.I. Crasovan¹. Taking into consideration these findings a new way of evaluating coping and defense mechanisms, paired together, as adaptative processes, can be developed and knowledge may be extended from one to another.

Strengths and limitations of the current study

This study is one of the few conducted on this specific population. We recruited medical trainees from different geographic regions and training centers in Romania. We used well-known, adapted, and validated instruments.

The most important limitation of our study is that the sample was selected based on the response to an invitation of participation made by local coordinators to their circle of colleagues and this can raise the problem of selection bias, excluding professionals outside this circle. By making an online assessment we could have avoided this problem. We believe that, because of the personal content of the questionnaires, a more friendly, personal approach was more culturally appropriate.

Conclusions

Problem-focused and emotion-based coping styles were the best-represented coping styles within the sample. Avoidant coping was the least used coping style. The superior adaptation was the best represented defense strategy followed by mental inhibition. The least used defense strategy was major distortion. Our results support the two hypothesized relationships with the associations between adaptive defenses and problem-oriented coping, and associations between non-adaptive defenses and avoidant coping. This grouping of adaptive processes is a newly emerging idea that needs further studies.

Abbreviations

DSQ-60 - Defense Style Questionnaire-60

COPE - Coping Inventory

SEM - Structural Equation Modeling

GFI - Goodness-of-Fit Index

RMSE - Root-Mean-Square Error of Approximation

IQR - Interquartile Range

SPSS - Statistical Package for the Social Sciences software

Declarations

Ethics approval and consent to participate

All data were anonymized before analysis. No sensitive participant information is included in the article. All participants signed written informed consent before inclusion in the study. The ethics committee decided approval was not necessary for these circumstances.

Consent for publication

Not applicable.

Availability of data and material

The datasets used and/or analyzed during the current study are available from the corresponding author on reasonable request.

Competing interests

All authors declare that they have no competing interests.

Funding - Not Applicable

Authors' contributions

ALP has made contributions to the conception, design of the study and the acquisition, analysis, and interpretation of data. FM made contributions to the design of the study, and the analysis and interpretation of data. NA has made contributions to the conception, design of the study, and interpretation of data. HM has made contributions to the conception of the study and the acquisition of data. LD has made contributions to the design of the study and analysis of data. CM has contributed to drafting and substantively revised the manuscript. LL has made contributions to the acquisition and interpretation of data. IA has made contributions to the acquisition. PI has made contributions to the design of the study and the interpretation of data. BC has made contributions to the conception, design of the study and the interpretation of data. All authors read, revised, and approved the final manuscript.

Acknowledgments

We would like to thank Dr. George Stercu, as president-elect of the Romanian Psychiatric Trainees Association at the time the study was conducted, for assistance. The questionnaires were distributed with the help of the Romanian Psychiatric Trainees Association.

References

1. Maricutoiu LP, Crasovan DI. Coping and defence mechanisms: What are we assessing? *Int J Psychol.* 2016;51(2):83-92.
2. Cramer P. [Coping and defense mechanisms: What's the difference?](#) *J Pers.* 1998;66(6):919-46.
3. Kramer U. Coping and defence mechanisms: What's the difference? – Second act. *Psychol Psychother.* 2010;83:207–21.
4. Freud S., *Inhibitions, symptoms and anxiety*, Standard edition. 1926;20:87-187.
5. Cramer P. Defense mechanisms in psychology today. Further processes for adaptation. *American Psychologist.* 2000;55:637-46.

6. Vaillant Positive mental health: is there a cross-cultural definition? *World Psychiatry*. 2012;11(2):93–9.
7. Skinner EA, Edge K, Altman J, Sherwood H. Searching for the structure of coping: A review and critiques of category systems for classifying ways of coping. *Psychol Bull*. 2003;129: 216–69.
8. Lazarus RS. Toward better research on stress and coping. *American Psychologist*. 2000;55(6):665–73.
9. Vollrath M, Alnæs R, Torgersen S. Coping in DSM-IV Options Personality Disorders. *J Pers Disord*. 1996;10(4): 335–44.
10. Felton BJ, Revenson TA. Coping with chronic illness: a study of illness controllability and the influence of coping strategies on psychological adjustment. *J Consult Clin Psychol*. 1984;52:343–53.
11. Nuechterlein KH, Dawson A heuristic vulnerability/stress model of schizophrenic episodes. *Schizophr Bull*. 1984;10(2):300–12.
12. Hankin BL, Abela JRZ. *Development of Psychopathology: A Vulnerability-Stress Perspective*. USA, California:Sage Publications; 2005.
13. Yank GR, Bentley KJ, Hargrove D The Vulnerability-Stress Model of Schizophrenia: Advances in Psychosocial Treatment. *Am J Orthopsychiatry*. 1993;63(1): 55–69.
14. Perry JC. *Defense mechanism rating scales*. Boston, MA: Harvard Medical School; 1990.
15. Carver CS, Scheier MF, Weintraub JK. Assessing coping strategies: A theoretically based approach. *J Pers Soc Psychol*. 1989;56:267–83.
16. Trufelli DC, Bensi CG, Garcia JB, Narahara JL, Abrão MN, Diniz RW, Da Costa Miranda V, Soares HP, Del Giglio A. Burnout in cancer professionals: a systematic review and meta-analysis. *Eur J Cancer Care*. 2008;17(6):524–31.
17. Frajermana A, Morvanb Y, Krebsa MO, Gorwoodb P, Chaumette B. Burnout in medical students before residency: A systematic review and meta-analysis. *Eur Psychiatry*. 2020;55:36–42.
18. Rotenstein LS, Ramos MA, Torre M, Segal JB, Peluso MJ, Guille C, Sen S, Mata DA. Prevalence of Depression, Depressive Symptoms, and Suicidal Ideation Among Medical Students. A Systematic Review and Meta-Analysis. *JAMA*. 2016;316(21):2214–36.
19. Mata DA, Ramos MA, Bansal N, Khan R, Guille C, Di Angelantonio E, Sen S. Prevalence of Depression and Depressive Symptoms Among Resident Physicians. A Systematic Review and Meta-analysis. *JAMA*. 2015;314(22):2373–83.
20. Guthrie E, Tattan T, Williams E, Black D, Bacliocotti H. Sources of stress, psychological distress and burnout in psychiatrists. *B J Psych Bull*. 1999;23(4):207–12.
21. Fothergill A, Edwards D, Burnard P. Stress, Burnout, Coping and Stress Management in Psychiatrists: Findings from a Systematic Review. *Int J Soc Psychiatry*. 2004;50(1):54–65.
22. Thomsen S, Soares J, Nolan P, Dallender J, Arnetz B. Feelings of professional fulfilment and exhaustion in mental health personnel: the importance of organisational and individual factors. *Psychother Psychosom*. 1999;68(3):157–64.

23. Chemtob CM, Hamada RS, Bauer G, Kinney B, Torigoe RY. Patients' suicides: frequency and impact on psychiatrists. *Am J Psychiatry*. 1988;145(2):224–8.
24. Baum N. Secondary Traumatization in Mental Health Professionals. A Systematic Review of Gender Findings. *Trauma Violence Abuse*. 2016;17(2):221-35.
25. Prosser D, Johnson S, Kuipers E, Szmukler G, Bebbington P, Thornicroft G. Perceived sources of work stress and satisfaction among hospital and community mental health staff, and their relation to mental health, burnout and job satisfaction. *J Psychosom Res*. 1997;43(1):51–9.
26. Dallender J, Nolan P, Soares J, Thomsen S, Arnetz B. A comparative study of the perceptions of British mental health nurses and psychiatrists of their work environment. *J Adv Nurs*. 1999;29(1):36-43.
27. Arendt M, Elklit A. Effectiveness of psychological debriefing. *Acta Psychiatr Scand*. 2001;104:423-37.
28. Wessely S, Deahl M. Psychological debriefing is a waste of time. *Br J Psychiatry*. 2003;183(1): 12-4.
29. van Emmerik AAP, Kamphuis JH, Hulsbosch AM, Emmelkamp PMG. Single session debriefing after psychological trauma: a meta-analysis. *Lancet*. 2002;360(9335):766-71.
30. Adams RE, Boscarino JA, Figley CR. Compassion Fatigue and Psychological Distress Among Social Workers: A Validation Study. *Am J Orthopsych*. 2006;1(76):103–8.
31. Bride BE, Robinson MM, Yegidis B, Figley CR. Development and validation of the Secondary Traumatic Stress Scale. *Res Soc Work Pract*. 2004;14:27–35.
32. McCann IL, Pearlman LA. Vicarious traumatization: A framework for understanding the psychological effects of working with victims. *J Trauma Stress*. 1990;3:131–49.
33. Figley CR. Compassion fatigue: Psychologists' chronic lack of self-care. *J Clin Psychol*. 2002;58:1433–41.
34. Manning-Jones S, Terte I, Stephens C. Secondary traumatic stress, vicarious posttraumatic growth, and coping among health professionals; A comparison study. *New Zealand J Psychol* 2016;45(1):20-9.
35. Popescu AL, Dehelean L, Papava I, Bredicean C, Crasovan D, Hurmuz M, Stefan ED, Manea M, Barbulescu A. Defensive and Coping Styles for Residents in Psychiatry. *Procedia Soc Behav Sci*. 2014;191(2):611-5.
36. Boncea IJ. Brain Drain in Romania: Factors Influencing Physicians' Emigration. *JCPP*. 2014; 1:64-74.
37. Thygesen KL, Drapeau M, Trijsburg RW, Lecours S, deRoten Y. Assessing defense styles: Factor structure and psychometric properties of the new Defense Style Questionnaire 60 (DSQ-60). *IJP&PT*. 2008;8:171–81
38. American Psychiatric Association. *Diagnostic and statistical manual of mental disorders (4th ed.)*. Washington, DC: Author; 1994.
39. Craşovan DI, Maricuţoiu LP. Adaptation of the Defensive Style Questionnaire 60 (DSQ-60) within a Romanian sample. *Cogn Brain Behav*. 2012;XVI(4):509-28.

40. Crasovan DI, Sava FA. Translation, adaptation and validation on Romanian population of COPE Questionnaire for coping mechanisms analysis. *Cogn Brain Behav.* 2013;XVII(1):61-76.
41. Jovic E, Wallace JE, Lemaire J. The generation and gender shifts in medicine: an exploratory survey of internal medicine physicians. *BMC Health Serv Res.* 2006;6:55
42. Levinson W, Lurie N. When Most Doctors Are Women: What Lies Ahead? *Ann Intern Med.* 2004;141(6):471-74.
43. Dalla C, Antoniou K., Drossopoulou G., Xagoraris M., Kokras N., Sfikakis A., Papadopoulou-Daifoti Z. Chronic mild stress impact: Are females more vulnerable? *Neuroscience* 2005;135(3):703-14.
44. Vahtera J, Kivimäki M, Väänänen A, Linna A, Pentti J, Helenius H, Elovainio M. Sex Differences in Health Effects of Family Death or Illness: Are Women More Vulnerable Than Men? *Psychosom Med.* 2006;68(2):283-91.
45. Umberson D, Williams K. Family Status and Mental Health. In: Aneshensel C.S., Phelan J.C. (eds) *Handbook of the Sociology of Mental Health. Handbooks of Sociology and Social Research.* Springer, Boston, MA. 1999.p. 225-53.
46. Gjerberg E. Women doctors in Norway: the challenging balance between career and family life. *Soc Sci Med.* 2003;57(7):1327-41.
47. Kramer U, Despland JN, Michel L, Drapeau M, DeRoten Y. Change in defense mechanisms and coping over the course of short-term dynamic psychotherapy for adjustment disorder. *J Clin Psychol* 2010;66(12):1232-41.
48. Kramer U, De Roten Y, Michel L, Despland JN. Early change in defence mechanisms and coping in short-term dynamic psychotherapy: Relations with symptoms and alliance, *Clin Psychol Psychother.* 2009;16:408-17.
49. Perry JC, Bond M. Change in Defense Mechanisms During Long-Term Dynamic Psychotherapy and Five-Year Outcome, *Am J Psychiatry.* 2012;169(9):916-25.
50. Whitty MT. Coping and defending: Age differences in maturity of defence mechanisms and coping strategies. *Aging Ment.*2003;7(2):123-32.
51. Rathod S, Roy L, Ramsay M, Das M, Birtwistle J, Kingdon D. A survey of stress in psychiatrists working in the Wessex Region. *Psych Bull.* 2000;24(4):133-6.
52. Diehl M, Coyle N, Labouvie-Vief G. Age and Sex Differences in Strategies of Coping and Defense Across the Life Span, *Psychol Aging.* 1996;11(1):127-39.
53. Kumar S. Burnout in psychiatrists, *World Psychiatry.* 2007;6(3): 186–9.
54. Araujo K, Ryst E, Steiner H. Adolescent Defense Style and Life Stressors, *Child Psychiatry Hum Dev.* 1999;30(1):19–28.
55. Steinhardt M, Dolbier C. Evaluation of a Resilience Intervention to Enhance Coping Strategies and Protective Factors and Decrease Symptomatology, *J Am Coll Health.* 2008;56(4):445-53.
56. Dolbier CL, Jaggars SS, Steinhardt MA. Stress-related growth: pre-intervention correlates and change following a resilience intervention, *Stress Health.* 2010;26(2):135-47.

57. Parkes K. Coping, negative affectivity, and the work environment: Additive and interactive predictors of mental health, *J App Psychol*. 1990;75:399-409.
58. Koeske GF, Kirk SA, Koeske RD. Coping with job stress: Which strategies work best? *JOOP*. 1993;66:319-35.
59. Pines A, Aronson E, Kafry D. *Burnout: From tedium to personal growth*, FreePress, New York. 1981.
60. Etzion D, Pines A. Sex and culture in burnout and coping among human service professionals: A social psychological perspective, *J Cross Cult Psychol*. 1986;17:191-209.
61. Jex SM, Bliese PD, Buzzell S, Primeau J. The impact of self-efficacy on stressor–strain relations: Coping style as an exploratory mechanism, *J App Psychol*. 2001;86:401-9.
62. Kinicki AJ, McKee FM, Wade KJ. Annual review 1991–1995: Occupational Health, *J Vocat Behav*. 1996;49:190-220
63. Boyda NG, Lewinb JE, Sager JK. A model of stress and coping and their influence on individual and organizational outcomes, *J Vocat Behav*. 2009;75(2):197-211.
64. Folkman S, Lazarus RS. An Analysis of Coping in a Middle-Aged Community Sample, *J Health Soc Behav*. 1980;21(3):219-39.

Figures

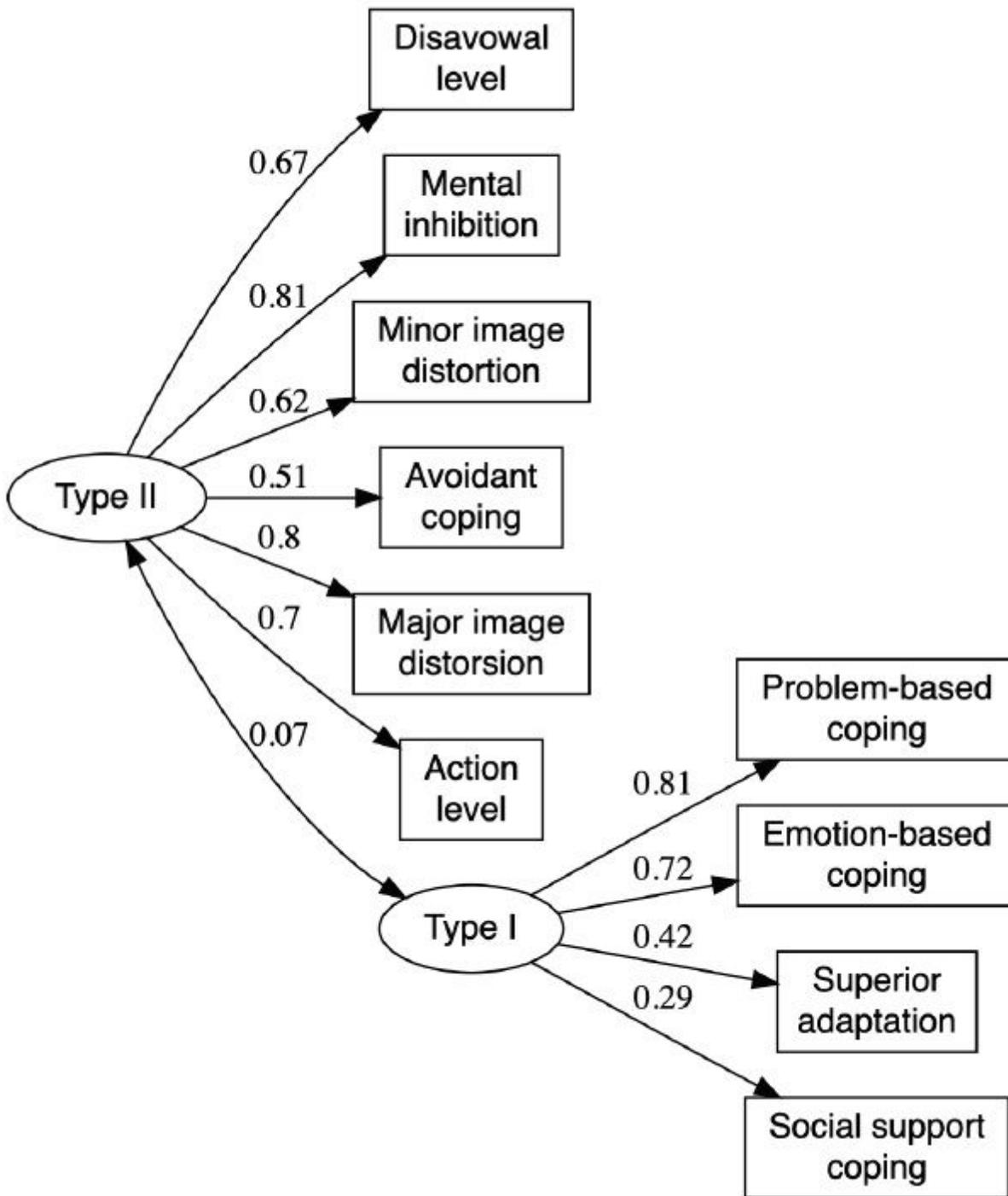


Figure 1

Graphical representation of the model showing the two types of the adaptation process, corresponding to different psychiatry residents' profiles.