

Exploring Romanian Resilience: A Network Analysis of Coping Mechanisms During the COVID-19 Pandemic

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Abstract

The COVID-19 pandemic has introduced significant challenges worldwide, requiring the swift adaptation of coping strategies to manage ongoing uncertainty and disruption. Coping mechanisms are influenced by individual personality traits, cognitive patterns, and perceptions, often triggered by stress or critical events such as the pandemic. This study, using a network analysis approach, examines the coping strategies employed during the repeated waves of the COVID-19 pandemic, based on a convenience sample of 403 individuals from Romania. The results show that substance use is the most destabilizing factor in the resilience network, while the use of instrumental support shows the most positive impact. These findings provide valuable insights into both the effective and ineffective coping strategies that have contributed to the resilience of the Romanian population during the pandemic. They emphasize the need for targeted interventions that address the unique roles and vulnerabilities of specific coping mechanisms in the ongoing context of COVID-19 disruptions.

Keywords: Romanian resilience, Network analysis, Coping mechanisms, Pandemic resilience, COVID-19, Substance use

Introduction

The ongoing global effects of the COVID-19 pandemic have made it increasingly vital to comprehend the coping strategies that individuals adopt to handle the ongoing stress and uncertainty they face [1]. This unprecedented health crisis has had wide-ranging consequences, affecting all aspects of human life and impacting individuals, communities, and nations alike [2]. In response to recurring challenges and disruptions, the swift development and application of coping mechanisms

have become key to sustaining well-being both individually and collectively. Understanding how populations adapt and build resilience during such complex, multi-dimensional crises is essential. This research aims to explore the coping strategies adopted by the Romanian population during the COVID-19 era, utilizing network analysis to uncover the relationships between different coping mechanisms in this context. Since COVID-19 emerged in late 2019, it has spread rapidly around the globe, affecting millions of people. Romania, like many other countries, has faced unique challenges in managing the crisis. The impact of the pandemic continues to be deeply felt, revealing the importance of understanding how Romanians have developed coping mechanisms to handle the continuous waves of the virus and the socio-economic uncertainties that have followed.

Resilience, a concept grounded in psychology and sociology, reflects the ability of individuals or

Access this article online

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Received: 08 January 2023; Accepted: 03 April 2023

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How to cite this article: Delcea C, Rad D, Gyorgy M, Runcan R, Breaz A, Gavrilă-Ardelean M, et al. Exploring Romanian Resilience: A Network Analysis of Coping Mechanisms During the COVID-19 Pandemic. Int J Soc Psychol Asp Healthc. 2023;3:13-20. <https://doi.org/10.51847/HgPI0yOclr>

communities to adapt to and recover from adversity [3]. It is shaped by multiple factors, such as individual traits, social support networks, and environmental influences [4]. During the COVID-19 pandemic, resilience has become a framework for understanding how people and communities manage ongoing challenges, minimize psychological distress, and continue to function despite adversity.

Rather than being a fixed trait, resilience is a dynamic process that individuals and communities can cultivate and improve [5]. Coping mechanisms—ranging from psychological strategies to behavioral responses—are critical in this process [6]. These mechanisms can be either adaptive, helping individuals maintain emotional well-being, or maladaptive, increasing distress and preventing resilience from developing [7].

The pandemic has also introduced a new layer of uncertainty, particularly social uncertainty [8]. Measures such as lockdowns, social distancing, economic instability, and an evolving public health landscape have led to an overwhelming sense of unpredictability in people's lives [9]. This social uncertainty presents unique challenges, as individuals must navigate not only health risks but also broader societal and economic pressures [10]. Investigating how individuals in Romania have coped with these various stressors is key to developing tailored interventions and deepening our understanding of resilience and adaptability [11].

This study uses a network analysis approach to identify the coping strategies that have emerged in Romania during the COVID-19 pandemic. By exploring the factors that contribute to resilience and identifying both adaptive and maladaptive coping mechanisms, the study offers valuable insights into how the Romanian population has navigated the challenges posed by the pandemic.

Materials and Methods

Instrument

The Brief COPE (coping orientation to problems experienced) is a popular self-assessment tool designed to evaluate how people manage stress and difficult life situations [12]. The questionnaire consists of 28 questions, divided into 14 distinct coping strategies, with two items representing each strategy. Respondents are asked to rate how often they employ each coping mechanism, using a scale from “I haven’t been doing this

at all” (1) to “I’ve been doing this a lot” (4). The strategies measured include:

- Self-distraction: Using activities to take one’s mind off the issue.
- Active coping: Actively seeking ways to eliminate or alleviate the stressor.
- Denial: Pretending the stressor doesn’t exist.
- Substance use: Using alcohol or drugs as a coping method.
- Use of emotional support: Turning to others for emotional help.
- Use of instrumental support: Seeking practical advice or assistance.
- Behavioral disengagement: Giving up and reducing effort to deal with the stress.
- Venting: Expressing frustration or negative emotions.
- Positive reframing: Trying to view the situation in a more positive light.
- Planning: Creating an action plan to address the stressor.
- Humor: Finding humor in the situation as a coping strategy.
- Acceptance: Coming to terms with the stressor and accepting its presence.
- Religion: Seeking support from religious or spiritual beliefs.
- Self-blame: Taking personal responsibility or blaming oneself for the stressor.

The Brief COPE is instrumental in identifying how individuals react to stress and the coping mechanisms they rely on.

The tool's reliability was confirmed with a Cronbach's Alpha of 0.844, which is well above the standard 0.70 threshold, indicating high reliability in measuring the coping strategies being assessed [13].

Participants

The participants in this study were selected through convenience sampling, with the questionnaire link shared on multiple social media platforms. This approach allowed for a broad range of participants. In total, 403 individuals participated, with approximately 60% male and 40% female respondents.

The age distribution of participants varied, with the majority (32.75%) falling within the 26–35 years age range. The second largest group (24.32%) was between 36 and 45 years old, followed by 11.41% in the 18–25

years age group. Smaller proportions were in the 46–55 years (3.97%) and over 56 years (2.23%) categories.

All participants provided complete data on their age, ensuring no missing information in this section. The diverse demographic makeup of the sample enhances the applicability of the results and offers a comprehensive view of coping mechanisms across different age and gender groups.

Results and Discussion

Table 1 presents the descriptive statistics for the coping strategies evaluated in the questionnaire. These statistics provide a detailed overview of the central tendencies and the spread of responses from the participants. Additionally, we have included 95% confidence intervals and variance measures to offer a thorough description of the data.

Table 1. Descriptive statistics

	95% confidence interval variance									
	Valid	Missing	Mean	Std. deviation	Upper	Lower	Shapiro-Wilk	P-value of Shapiro-Wilk	Minimum	Maximum
Self-distraction	403	0	5.692	1.416	2.271	1.733	0.938	< .001	2.000	8.000
Active coping	403	0	5.551	1.524	2.606	2.040	0.943	< .001	2.000	8.000
Denial	403	0	3.367	1.407	2.307	1.674	0.849	< .001	2.000	8.000
Substance use	403	0	2.459	1.005	1.330	0.725	0.508	< .001	2.000	8.000
Use of emotional support	403	0	4.754	1.734	3.317	2.685	0.940	< .001	2.000	8.000
Use of instrumental support	403	0	4.380	1.575	2.778	2.172	0.933	< .001	2.000	8.000
Behavioral disengagement	403	0	2.586	1.115	1.566	0.927	0.594	< .001	2.000	8.000
Venting	403	0	4.129	1.527	2.610	2.035	0.927	< .001	2.000	8.000
Positive reframing	403	0	5.615	1.492	2.502	1.965	0.939	< .001	2.000	8.000
Planning	403	0	4.501	1.343	2.060	1.546	0.940	< .001	2.000	8.000
Humor	403	0	4.489	1.563	2.731	2.170	0.944	< .001	2.000	8.000
Acceptance	403	0	6.362	1.261	1.802	1.365	0.901	< .001	2.000	8.000
Religion	403	0	5.303	1.916	4.007	3.312	0.921	< .001	2.000	8.000
Self-blame	403	0	2.913	1.205	1.781	1.158	0.750	< .001	2.000	8.000

The coping mechanism of self-distraction was reported with an average score of 5.692 (SD = 1.416) by participants. The confidence interval for this strategy ranged from 2.271 to 1.733. A Shapiro-Wilk test revealed a statistic of 0.938 and a significant P-value (< .001), indicating that the data do not follow a normal distribution. The scores for self-distraction varied between 2.000 and 8.000.

Participants scored an average of 5.551 (SD = 1.524) for active coping. The confidence interval for this strategy was between 2.606 and 2.040. The Shapiro-Wilk test

yielded a statistic of 0.943, with a P-value < .001, pointing to a non-normal distribution. Active coping scores ranged from 2.000 to 8.000.

For the denial coping mechanism, the average score was 3.367 (SD = 1.407), with a confidence interval spanning from 2.307 to 1.674. The Shapiro-Wilk test revealed a statistic of 0.849 and a significant P-value (< .001), indicating a non-normal distribution. Denial scores ranged from 2.000 to 8.000.

Further, coping mechanisms followed similar patterns, with descriptive statistics shedding light on response

variability and distribution. These results are presented in **Table 1**.

In addition, a correlation analysis was used to explore the connections between the various coping strategies. This analysis helps determine if certain strategies are interrelated, either positively or negatively, and if individuals use multiple coping mechanisms together or rely on distinct ones.

By examining the correlation of coping mechanisms, we can better understand how participants adapted during the repeated challenges of the COVID-19 period. The correlation matrix is shown in **Figure 1**, which helps visualize the patterns and relationships between different coping strategies.

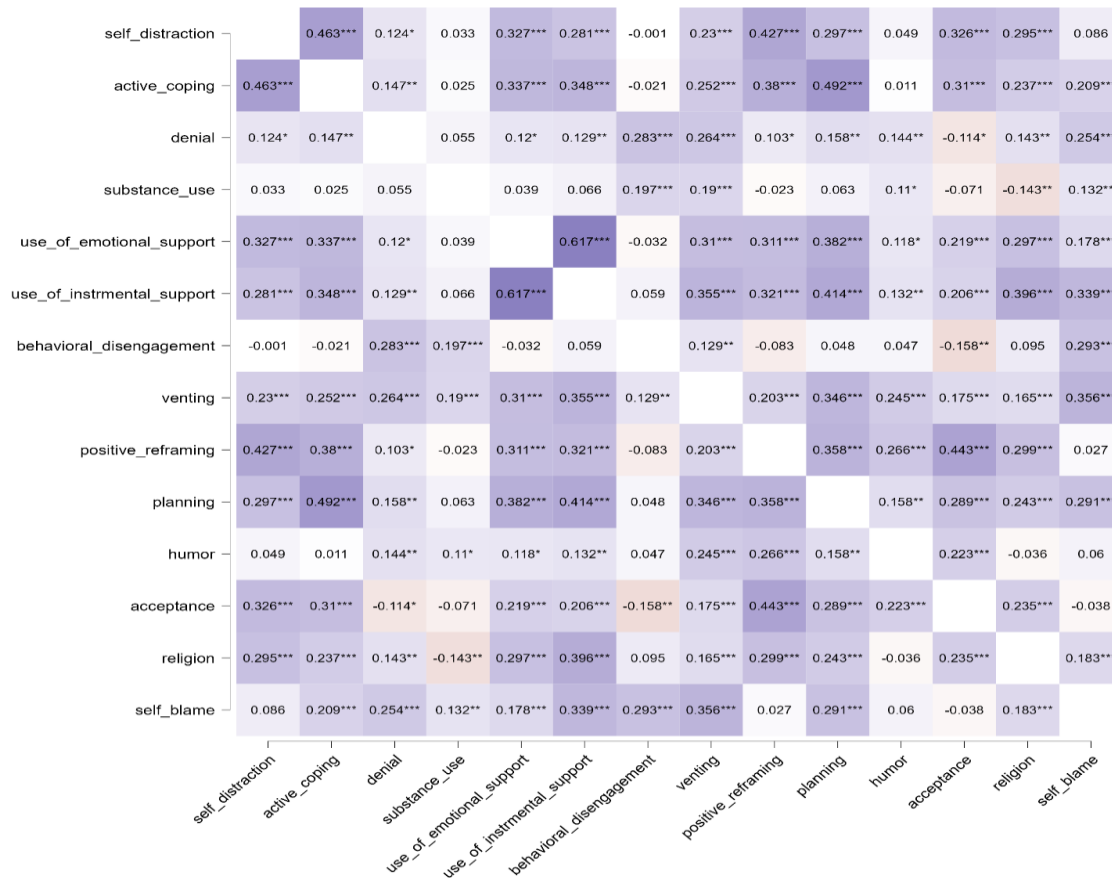


Figure 1. Correlations heatmap between coping mechanisms

To investigate the relationships between different coping strategies, Pearson's correlation analysis was conducted. The results revealed that active coping was significantly positively correlated with planning ($r = 0.492$) and seeking instrumental support ($r = 0.348$). Positive reframing also showed a notable positive correlation with planning ($r = 0.358$) and active coping ($r = 0.380$). Venting had a substantial positive relationship with the use of instrumental support ($r = 0.355$) and active coping ($r = 0.252$). Emotional support use was strongly correlated with instrumental support use ($r = 0.617$). Self-

distraction was moderately positively correlated with both active coping ($r = 0.463$) and positive reframing ($r = 0.427$). Emotional support further demonstrated moderate positive correlations with planning ($r = 0.382$) and positive reframing ($r = 0.311$). Negative correlations were found between acceptance and both denial ($r = -0.114$) and substance use ($r = -0.071$). Other coping mechanisms, such as substance use, humor, and religion, showed weak correlations with other strategies.

The combination of correlation and network analysis techniques provides a holistic approach to understanding

the intricate relationships between variables in complex datasets, especially in the fields of psychology and social sciences [14]. While correlation analysis identifies the direction and strength of associations between pairs of variables, it doesn't capture the complete network structure of relationships. This is where network analysis comes in—it visualizes the interconnections between all variables in the form of a network, offering a more comprehensive view of how the variables are linked. Network analysis also identifies key variables that are central or influential in the network, which cannot be easily done with correlation analysis alone. These central variables, or “hubs,” play a critical role in shaping the relationships and interactions within the dataset [15]. This approach is particularly useful when analyzing large, multidimensional datasets, as it allows for the identification of patterns and connections that would otherwise be difficult to interpret through traditional methods [16].

For this study, a network analysis was conducted using JASP software. The results revealed a network comprising 14 nodes (representing the coping strategies) and 66 edges (indicating the connections between them). The sparsity coefficient of 0.275 suggests that the network is relatively sparse, meaning that the coping strategies are somewhat independent of each other, with fewer direct connections than one might expect.

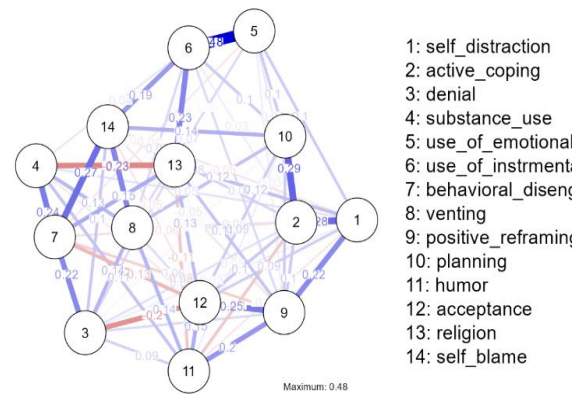


Figure 2. Network analysis results for the coping mechanisms

The network analysis, depicted in **Figure 2**, provides both a visual and numerical representation of the relationships between the various coping strategies. This analysis highlights the intricate connections among the coping mechanisms, revealing how each strategy interrelates with others.

The centrality measures, calculated for each variable, offer a quantitative assessment of the importance and influence of each coping strategy within the network. These coefficients help to identify which strategies play a central role in shaping the overall structure of coping responses.

Table 2. Centrality measures per variable

Variable	Network			
	Betweenness	Closeness	Strength	Expected influence
Self-distraction	-0.298	-0.666	-0.438	0.350
Active coping	-0.298	-1.193	0.407	0.296
Denial	-1.033	-0.739	-0.676	-0.642
Substance use	-0.788	-0.108	-1.605	-1.618
Use of emotional support	-1.033	-1.421	-1.497	0.126
Use of instrumental support	1.173	0.137	0.978	1.807
Behavioral disengagement	1.418	1.244	0.852	-0.630
Venting	-1.033	0.100	-0.517	0.983
Positive reframing	-0.543	-0.239	1.210	0.937
Planning	0.438	-0.625	-0.683	0.892
Humor	-1.033	-0.638	-0.731	-1.026
Acceptance	0.193	0.875	1.488	-1.096
Religion	1.418	1.599	0.543	-0.937
Self-blame	1.418	1.674	0.669	0.558

The results from the network analysis, displayed in **Table 2**, offer valuable insights into the centrality measures of each coping mechanism within the network. These measures help us understand the significance and roles of individual coping strategies in the broader network structure.

Betweenness centrality evaluates how much a variable functions as a bridge between other variables. Variables with high betweenness values, such as “behavioral disengagement” (1.418), “religion” (1.418), and “self-blame” (1.418), play critical roles in connecting other variables, thus facilitating the flow of information or influence throughout the network.

Closeness centrality measures how quickly a variable can reach other variables within the network. A higher closeness score indicates that a variable is more central and has shorter average distances to other elements in the network. In this study, “active coping” (-1.193) demonstrates a lower closeness centrality, indicating it is somewhat less central. On the other hand, “self-blame” (1.674) displays the highest closeness centrality, suggesting it is positioned centrally and easily accessible within the network.

Strength centrality looks at the total influence of a variable by considering the intensity of its connections to other variables. Stronger connections indicate more influence. “Acceptance” (1.488) and “use of instrumental support” (0.978) stand out as the strongest variables, suggesting that they have a significant influence on other coping strategies. “substance use” (-1.605), in contrast, shows the lowest strength centrality, indicating its weaker influence on other variables.

Expected influence indicates the anticipated impact a variable will have within the network based on its structural position and links to other variables [17]. Positive values show that the variable is expected to exert influence, while negative values suggest it may be more impacted by other variables. “Use of instrumental support” (1.807) has the highest expected positive influence, signaling its potential to positively impact other coping mechanisms. In contrast, “substance use” (-1.618) shows the greatest negative expected influence, indicating it may be more reactive to other variables.

The centrality measures derived from the network analysis offer a deeper understanding of the coping mechanisms’ dynamics during the ongoing challenges posed by COVID-19. Two coping strategies, “use of instrumental support” and “substance use,” demonstrate

significantly different expected influence coefficients, offering meaningful insights into their roles in the pandemic context.

Instrumental support emerges as a crucial coping mechanism, evidenced by its high expected positive influence coefficient (1.807). This reflects the significant role that practical assistance, problem-solving, and resource mobilization play in helping individuals manage the ongoing challenges of the pandemic. This is consistent with theoretical frameworks that highlight instrumental support as essential in promoting resilience and addressing the complexities of crises like COVID-19 [18].

In contrast, substance use shows the highest negative expected influence coefficient (-1.618), indicating its vulnerability to external factors and other variables within the coping network. This result aligns with the notion that substance use often serves as a coping strategy in response to stress or emotional distress, particularly in the face of recurring COVID-19 challenges [19]. The negative coefficient suggests that interventions or support systems could significantly alter the use of substance-based coping strategies. This finding emphasizes the need for targeted efforts to promote healthier coping mechanisms and provide support to individuals struggling with substance use during these challenging times [20-29].

Conclusion

In the context of recurring COVID-19 challenges, this study highlights the crucial roles and flexibility of coping mechanisms. Theoretical perspectives provide insight into how these strategies interact with other factors when individuals face continuous pandemic-related stress. These findings reveal the intricate relationships between various coping strategies and underscore the need for customized interventions that account for the unique roles and vulnerabilities of certain mechanisms during ongoing COVID-19 waves. As we continue to navigate the persistent effects of the pandemic, these insights stress the importance of fostering effective coping mechanisms, improving support systems, and addressing at-risk behaviors such as substance use. Future studies and practical approaches should explore the complexities of coping strategies during recurring crises, aiming to strengthen resilience, improve mental health, and enhance adaptive responses to future challenges.

Acknowledgments: None

Conflict of Interest: None

Financial Support: None

Ethics Statement: None

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