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The Relationship Between Socioecological Factors and Resilience Among Urban Workers During the COVID-19 Pandemic

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Abstract

The global outbreak occasioned by the coronavirus disease 2019 (COVID-19) has affected people of working age in urban communities, both socially and psychologically, making resilience an important aspect of efforts to cope with such a crisis. Against this backdrop, this study identified and investigated the socioecological factors associated with the resilience of employable urban residents against the COVID-19 pandemic as part of a conceptual framework that encompasses individual, family, and community resilience. This cross-sectional research involved 368 working-age individuals recruited via simple randomization from communities in seven areas in central Bangkok. Data were collected through a questionnaire survey and examined through path analysis run on AMOS. The hypothesized model was tested on the basis of real data (χ^2 = 47.717, *df* = 10, *p* = .06, RMSEA = .03, RMR .097, GFI .978, CFI .99). The results showed that an individual's mental resilience factors and those of their family were generally more highly correlated with community resilience than were the resilience of working-age people in urban regions ($p < .01$). However, the adaptability of working-age individuals in urban areas more strongly depended on family resilience and individual mental health than on community resilience. The results of this study will serve as a foundation for guiding community nurses in the design and implementation of interventions aimed at promoting mental health among working-age individuals and their families.

Keywords: COVID-19, mental health, resilience, socioecological, working age

Abstrak

***Hubungan antara Faktor Sosioekologis dan Ketahanan di antara Pekerja Perkotaan Selama Masa Pandemi* COVID-19.** *Wabah global yang disebabkan oleh penyakit* coronavirus 2019 (COVID-19) *memberikan dampak pada pekerja di masyarakat perkotaan, baik secara sosial maupun psikologis, sehingga ketahanan menjadi aspek penting dalam upaya mengatasi krisis semacam ini. Studi ini mengidentifikasi dan meneliti faktor-faktor sosioekologis yang terkait dengan ketahanan penduduk perkotaan selama pandemi* COVID-19 *sebagai bagian dari kerangka konseptual yang mencakup ketahanan individu, keluarga, dan komunitas. Penelitian potong lintang ini melibatkan 368 individu usia produktif yang direkrut melalui randomisasi sederhana dari masyarakat di tujuh wilayah di pusat Bangkok. Data dikumpulkan melalui survei kuesioner dan dianalisis menggunakan path analysis pada AMOS. Model yang dihasilkan diuji berdasarkan data nyata (χ2 = 47,717,* df *= 10, p = 0,06,* RMSEA *= 0,03,* RMR *0,097,* GFI *0,978,* CFI *0,99). Hasil menunjukkan bahwa faktor ketahanan mental individu dan keluarga umumnya lebih erat terkait dengan ketahanan komunitas dibandingkan dengan ketahanan individu usia kerja di daerah perkotaan (p < 0,01). Namun, kemampuan beradaptasi individu usia kerja di daerah perkotaan lebih bergantung pada ketahanan keluarga dan kesehatan mental individu daripada ketahanan komunitas. Hasil penelitian ini akan menjadi dasar bagi perawat komunitas dalam merancang dan melaksanakan intervensi yang bertujuan untuk meningkatkan kesehatan mental di kalangan individu usia kerja dan keluarganya.*

Kata Kunci: COVID-19*, kesehatan mental, ketahanan, sosioekologis, usia kerja*

Introduction

In Thailand, Bangkok has suffered the greatest number of infections from the coronavirus disease-2019 (COVID-19), with people living and working (aged between 18 to 59 years) in densely populated communities in the city center being the most commonly afflicted groups (De-

partment of Disease Control Ministry of Public Health, 2022). The COVID-19 pandemic has affected both the physical and psychological health conditions of the population. However, most working-age individuals who contract COVID-19 suffer psychologically given company shutdowns that prevent them from earning a living, cause families to lose income, and lead to the frequent accumulation of increasing debts (Thailand Development Research Institute, 2020). Most working-age people are the heads of families, responsible for their families' expenses and ensuring their well-being. These individuals may have also suffered the loss of close family members, albeit certain people can endure such hardship as well as adapt and carry on with their daily lives as usual. Moreover, work-from-home policies have weakened relationships with other people at work, and this distance can give rise to stress, anxiety, and emotional exhaustion. Stress, for example, has adversely affected work performance during the global COVID-19 outbreak (Vanchapo et al., 2023). Amid the crisis resulting from COVID-19, however, there is an opportunity to enhance one's psychological condition and cope with stress in life (Sucaromana, 2016).

Generally, people may be confronted with adverse psychological challenges resulting from difficult situations or extreme life events, in which case they will need to develop resilience to restore normal functioning. Resilience or renewed energy comes from within the human soul (Han, 2024), and it involves a balancing act as an individual cope with threatening life situations in a way that enables recovery in a mentally energetic manner. This coping process requires adaptation (Nopa et al., 2024). A highly resilient person develops physical and psychological well-being, enabling them to handle traumatic events, such as the COVID-19 pandemic (Fenxia, 2022). Resilience is also correlated with the elements that constitute multilayered environments, such as families, friends, and communities (Hofgaard et al., 2021). According to ecological systems theory, diverse factors and interactions between individuals and the environment affect the healthiness of lifestyles.

Individual mental health is part of well-being, which is defined by positive psychologists as a person's flourishing, a real awareness of their true self, and the achievement of their highest potential)self-actualization). Therefore, a person's positive thinking, such as optimism, hope, self-efficacy, post-traumatic growth, and increased academic levels can engender considerable resilience (Robles-Bello et al., 2020). Resilience among individuals is substantially supported by a psychologically stable family (Charoensap-Kelly et al., 2021), who can provide the emotional support crucial for an individual to withstand the impact of the COVID-19 pandemic (Ferreira et al., 2020; Nopa et al., 2024). Such a state is also favorably influenced by social support from the community (Fuller & Huseth-Zosel, 2021). The community supports by fostering a sense of belonging and trust among members. In turn, strong community support enhances resilience. Especially, participation in disaster alleviation and public activities can increase attachment to the community. In turn, strong community support enhances life resilience.

A multilevel ecological framework indicates that individual mental health (individual level), family resilience (interpersonal level), and community support (community level) are interrelated with health behaviors and the resilience of working-age individuals. Although numerous reports have been published on resilience in the time of COVID-19, few studies have examined this state during the global crisis in the context of urban areas. The literature has also been unclear as to whether the aforementioned framework is applicable to a pandemic that has substantially impacted the resilience of employable populations.

To address these deficiencies, the current study investigated the effects of the relationships between the individual, family, and community variables on life resilience in the socioecological model of resilience. More specifically, it identified and examined the direct effects of the fa-

mily and the community on the mental health and resilience of employable individuals in the urban communities of Bangkok amid the COVID crisis. The results can serve as a reference for community nurses in their provision of services that include lunch interventions to promote mental health and strength among working-age people in the workplace, thereby enhancing the cognitive and emotional well-being of working-age populations.

Methods

This cross-sectional research was approved by the Human Research Ethics Committee of the Faculty of Medicine at Ramathibodi Hospital, Mahidol University (COA.MURA2022/387). It adhered to the Helsinki Declaration regarding the involvement of human subjects in studies. We collected data by distributing self-report questionnaires to the participants.

The statistical recommendations in the Analysis of Moment Structure (AMOS) software indicate that the sample for a cross-sectional study should be 20 times the number of parameters used in path analysis (i.e., 20 × 16 in our case), which corresponds to 320 participants (Memon et al., 2020). This initial value was increased by 10% to avoid the risk of missing data, enabling us to recruit a final sample of 368 individuals living in urban Bangkok. Specifically, we invited prospective respondents from seven communities chosen out of 53 on the basis of the following inclusion criteria: working-age individuals (1) between the ages of 18 and 59 years; (2) living in the selected communities for more than a year; (3) able to read, write, and listen in Thai; and (4) consenting to participation in the research. A list of prospects were obtained from the community leaders, after which a simple random sampling of 50 to 53 residents per community was conducted. In each community, we contacted the prospects individually to introduce ourselves and explain the objectives of the research. They were assured that the information obtained from them would be kept confidential and would have no impact on community life. The participants voluntarily signed informed consent forms, and then they were asked to complete the questionnaires independently. They were informed that they could ask us for more information should they fail to understand a question. The respondents completed all of the questionnaires in approximately 20 to 30 minutes, for which they received a token of appreciation.

To determine the descriptive statistics of the participants, we used the Statistical Package for the Social Science for Windows (SPSS 25.0, 3001359390) to calculate frequencies, percentages, means, and standard deviations. SPSS was also used to examine the assumptions of path analysis, including normality, multicollinearity, and linearity. Path analysis with maximum likelihood estimation was carried out in AMOS to inquire into the influence of socioecological factors on life resilience. The model was verified on the basis of χ^2, χ^2/df, the goodness of fit index (GFI < .9), the comparative fit index (CFI = 0.90–1.00), the root mean square error of approximation (RMSEA < .05) and, root mean squared residual (RMR < .05)

The research instruments were analyzed for reliability and construct validity using AMOS 25.0 (IBM). We developed the Personal Factors Questionnaire to obtain general information related to the sample, namely, age, gender, religion, COVID-19 infection status and the interval since infection. Individual mental health was measured using the Mental Health Continuum-Short Form (MHC-SF) questionnaire (Perugini et al., 2017), which had three sections, namely, emotional well-being, social well-being, and mental well-being, each comprising 14 items rated on a six-point scale: 0 = *never*, 1 = *once or twice*, 2 = *once a week*, 3 = *two to three times/week*, 4 = *almost every day*, and 5 = *every day*:

Cluster 1: Items 1–3 = hedonic, emotional well-being
Cluster 2: Items 4–8 = eudaimonic, social well-being

Respondents can obtain a total possible score between 0 and 70 on the MHC-SF. It had a content validity of 1.0, and a Cronbach's alpha was .93.

A measurement form comprising Sixbey's questionnaire (Chow et al., 2022) was used to determine family resilience. The form comprised three sections containing 31 items: (1) beliefs of family members, (2) family management, and (3) communication and problem-solving in the family. The items were rated on a four-point scale ranging from 1 (*strongly disagree*) to 5 (*strongly agree*). The content validity index of the form was 1.0, and its Cronbach's alpha was .91.

Community resilience was ascertained using the Conjoint Community Resiliency Assessment Measurement (CCRAM10) developed by Leykin

Table 1. Number and Percentage of Subjects Classified by Individual Factors

Individual Factors	*n*	%
Gender		
Female	194	52.7
Male	174	47.3
Age)years(		
18–29	70	19.0
30–39	67	18.2
40–49	80	21.8
50–59	151	41.0
COVID-19 infection		
No	206	56.0
Yes	162	44.0
Education		
Elementary school	143	38.9
Secondary school	79	21.5
High school/vocational certificate	67	18.2
Diploma/higher vocational certificate	24	6.5
Bachelor's degree	55	14.9
Occupation		
General employee	151	41.0
Business owner	70	19.0
An employee of a private company	37	10.2
Unemployed	79	21.4
Government officer	18	4.9
Income (baht/month)		
<15,000	312	84.8
15,001–30,000	50	13.6
>30,000	6	1.6
During the COVID-19 pandemic, were there any work problems? (specifying more than 1 item allowed)		
No	109	29.6
Yes	259	70.4
Stopped working temporarily	167	64.5
Unemployed	44	17.0
Difficulty commuting to work	43	16.6
Working from home	26	10.0
Laid off	9	3.5
During the COVID-19 pandemic, were there any financial problems? (specifying more than 1 item allowed))cont.(		
Decrease in income	202	66.2
Being in debt	130	42.6
Paying for medical care	14	4.6

Table 2. Means and Standard Deviations of Individual mental health, Family and Community Resilience

Factors	Min–Max	Mean	Standard Deviation (*SD*)
Individual mental health	0–70	52.96	11.70
Hedonic well-being)emotional well-being(	0–15	11.33	2.90
Eudaimonic)social well-being(	0–25	18.17	4.83
Psychological well-being	0–30	23.46	5.17
Family resilience	1.10–3.94	2.92	.32
Belief systems	1.09–4.00	3.11	.44
Organizational patterns	1–4	2.84	.33
Communication/problem-solving	1.14–4.00	2.79	.38
Community resilience	1–5	3.81	.72
Place attachment	1–5	3.93	.83
Leadership	1–5	3.85	.83
Social trust	1–5	3.79	.84
Preparedness	1–5	3.77	.82
Collective efficacy	1–5	3.71	.84

et al. (2016). It consisted of five sections: (1) leadership, (2) efficiency in the community, (3) readiness in the community, (4) commitment to the community, and (5) trust in society. The 10 items under each section were rated on a five-point scale ranging from 1 (*strongly disagree*) to 5 (*strongly agree*). High scores indicate a considerable awareness of community adaptation. The content validity index of CCRAM10 was 1.0, and its Cronbach's alpha was .95.

Life resilience was measured in terms of psychological resilience, which covered flexibility, self-efficacy, emotion regulation, optimism, and maintaining attention under stress. For this purpose, we used Connor Davidson's (Gras et al., 2019) Strength Test Life Resiliency 10 (CD-RISC 10), which is a 10-item questionnaire that measures a person's ability to adapt to, or cope with, stress or life events. A five-point scale was used to rate the items: 1 = *not true at all*, 2 = *rarely true*, 3 = *sometimes true*, 4 = *often tru*e, and 5 = *on almost all days*. The total score possible on this questionnaire ranges from 0 to 40, with a high score meaning a strong ability to adapt. The content validity of CD-RISC 10 was 1.0, and its Cronbach's alpha was .95.

Results

Among the 368 participants, 52.7% were female with an average age of 42.92 years, and most were Buddhists (77.4%). A total of 56.0% had never been infected with COVID-19, while 44.0% had been afflicted with the disease. Of those contracting COVID-19, 38.9% had been infected once, and 16.8% were infected four to six months prior to the study. Of the respondents, 38.9% completed elementary education, and 41.0% were employed. During the COVID-19 pandemic, 70.4% experienced work-related issues, while 82.9% grappled with financial difficulties (see Table 1).

All the participants reported a level of family and community resilience, with the following average scores: place attachment: mean = 3.93 ± 0.83; leadership: mean = 3.85 ± 0.83; social trust: mean = 3.79 ± 0.84; preparedness: mean = 3.77 ± 0.82; and collective efficacy: mean = 3.71 ± 0.84. The results showed the following average scores for hedonic, eudaimonic, and overall psychological well-being: mean = 11.33 ± 2.90, 18.17 ± 4.83, and 23.46 ± 5.17, respectively (see Table 2).

The analysis of individual mental health revealed that 73.9% of the sample had considerable well-being in this respect. All the participants exhibited strong family resilience, with the following average scores for each component of this variable: beliefs of family members. All the participants reported a moderate level of community resilience (see Table 3).

Table 3. Number and Percentage of the Sample Classified by Individual Mental Health and Family and Community Resilience (*n* = 368)

Factors	*n*	%
Individual mental health		
High level	272	73.9
Moderate level	63	17.1
Low level	33	9.0
Family resilience		
High level	368	100
Moderate level	0	0
Low level	0	0
Community resilience		
High level	0	0
Moderate level	368	100
Low level	0	0

Table 4. Number and Percentage of the Sample Classified by Life Resilience

Life Resilience	*n*	%
Low level (0–29 points(	137	37.2
Moderate level (30–32 points(	131	35.6
High level (33–40 points(	100	27.2
Mean)*SD*(	29.87	(5.76)

The analysis of life resilience showed that 37.2% of the sample had low resilience, 35.6% had moderate resilience, and 27.2 % had substantial resilience (see Table 4).

The results of the preliminary analysis intended to test the assumption of multivariate normality was confirmed by the diagram figure. Although the data on community resilience were normally distributed, the variables for individual mental health, community resilience, and life resilience exhibited slight positive skewness and moderate kurtosis, indicating that these were non-normally distributed. Multicollinearity was assessed using the correlation coefficients of the variables, with values below 0.85 suggesting the absence of multicollinearity. The linearity and coefficients of correlation between the variables were statistically significant, showing that the assumption of linearity was satisfied.

Causal relationships were found between life resilience, individual mental health, and family and community resilience. The hypothesized model explained 40% of the variance in life resilience. The results show how the different measured parameters affect working. The model also showed satisfactory fit with the data, as evidenced by the following values: $\chi^2 = 47.717$, *df* 34, $p = .06$, RMSEA = .03, RMR .097, GFI .978, CFI .995 (see Figure 1).

All the paths shown were statistically significant ($p < .01$). Our exploration of individual mental health, family resilience, and community resilience demonstrated that individual mental health and family resilience were affected by life resilience, with this relationship being statistically significant ($p < .001$). The family resilience path exerted the greatest effect on resilience (.36, $p < .001$), while belief systems were most strongly correlated with family resilience (.98, $p < .01$) (Table 5). At the same time, individual mental health affected resilience (.32, $p < .001$), and the hedonic aspects of such health showed the highest correlation with individual psychological well-being (.99, $p < .05$). The community resilience path exhibited the

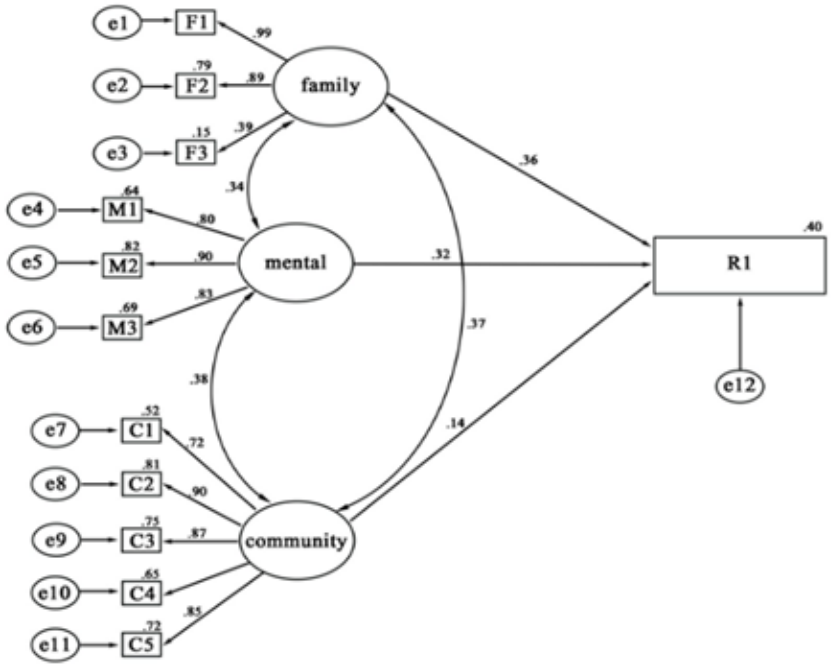

Figure 1. Model of Resilience Among Working-Age People in Urban Thailand During the COVID-19 Pandemic

χ^2 = 47.717, *df* 10, *p* = .06, RMSEA = .03, RMR .097, GFI .978, CFI .995

Note: F1 = Family communication and problem-solving, F2 = Organizational patterns, F3 = Belief systems, M1 = Hedonic, M2 = Eudaimonic, M3 = psychological well being, C1 = Leadership, C2 = Collective efficacy, C3 = Preparedness, C4 = Place attachment, C5 = Social trust, R1 = Life Resilience

Table 5. Squared Multiple Correlations

Variable	Standardized Coefficient	Unstandardized Coefficient
Family		
Family communication and problem-solving	.833**	.985**
Organizational patterns	.903**	.793**
Belief systems	.799**	.154**
Individual mental health		
Hedonic (being happy, interested in life, life satisfaction)	.993**	.638**
Eudaimonic (social well-being)	.891**	.815**
Psychological well-being	.392**	.694**
Community		
Leadership	.521**	.521**
Collective efficacy	.809**	.809**
Preparedness	.750**	.750**
Place attachment	.648**	.648**
Social trust	.715**	.715**

***p* <.001

Table 6. Standardized Regression Weights

Variable	Standardized Coefficient	Unstandardized Coefficient
Life resilience ← Individual mental health	.318**	.796**
Life resilience ← Family	.360**	4.732**
Life resilience ← Community	.136**	1.311**
Individual mental health ←→ Community	.376**	.518**
Individual mental health ←→ Family	.342**	.34**
Family ←→ Community	.373**	.098**

χ^2 = 47.717, *df* 34, p = .06, RMSEA = .03, RMR .097, GFI .978, CFI .995
p < .001**

weakest correlation with resilience, with a path coefficient of .14 (p < .01) (Tables 5 and 6). Preparedness was most strongly correlated with family resilience (.98, p < .01) (see Figure 1).

Discussion

Our causal model addressed the relationships between life resilience, individual mental health, and family and community resilience. The model of resilience among working-age individuals showed a satisfactory fit with the data collected from the sample. However, a model identified as showing a slight fit with data using the chi-square statistic may be influenced by sample size (>250 participants) and the number of observed variables (Gras et al., 2019). Our model explained 40% of the variance in resilience, which is lower than the 60% recommended by Moksony (1990, as cited in Hair, 2022). However, in the sciences and the humanities, it is acceptable for the *R*-squared to be lower than 50% or even below 20% in some cases. An ecological model encompasses four essential elements, namely, intrapersonal, interpersonal, community, and organizational factors, but our model lacked a consideration of organizational factors, making its coverage incomplete. A more comprehensive model can explain a greater proportion of variance in data, as the *R*-squared tends to increase with the inclusion of more variables (Chen & Sriphon, 2021). The absence of organizational and policy factors in our representation may explain why we were unable to fully account for variations in the phenomenon of interest.

We found that family resilience had the greatest influence on working-age people's psychological resilience. Two-thirds of the participants exhibited moderate to high resilience. In Thai culture, most families are extended so that they often have members of different generations, such as parents, grandparents, and children—all of whom live together and normally espouse the same beliefs (Karch, 2020). When families or members have problems, they tend to consult and talk with each other as well as share their feelings, resulting in good family interactions and a predilection for encouraging one another; that is, they work together to solve problems (Barton et al., 2023; Fadmawaty & Wasludin, 2021). Therefore, the family is instrumental in helping individuals survive various crises and increasing individual resilience (Firman et al., 2025; Thomas et al., 2017).

The findings also demonstrate that individual mental health affects life resilience. Working-age individuals tend to have emotional well-being and optimism, both of which can lead to high levels of resilience (Chen et al., 2021). Although individuals may find themselves in a crisis, they may experience satisfaction and positive feelings, which might decrease their pain (negative emotions). They can adapt to new situations more easily and create good mechanisms with which to address problems. Resilience is related to feelings of value in life and decreased suffering (Özer et al., 2023), and resilient individuals can maintain favorable psychological conditions. These factors, in turn, contribute to community resilience. Furthermore,

unemployed individuals experience tremendous psychological stress and anxiety, whereas those employed and earning high incomes tend to be psychologically healthier than those receiving low wages (Fernández-Alonso et al., 2023).

In this study, the working-age participants experienced moderate community resilience. Communities in Bangkok are densely populated urban regions, with some being slum areas characterized by overcrowding and lacking a good environment. Environmental management is poor due to the unsocial behaviors of residents, contributing to poor hygiene and low quality of life (Coulombe et al., 2020). People living in urban communities tend to live differently and have little interaction with their neighbors (Zhang & Xiang, 2019). They showed little interest in their fellow residents and focused primarily on earning money to survive the COVID-19 situation. This study did not measure actual amounts of money but measured a range of income. During the pandemic, 84% of the sample had a monthly per capita income lower than the national average for Thai citizens (15,000 baht/month or US$463.04 compared with the average of 18,000 baht/month or US$555.65). As a result, community trust and the sense of connection among residents diminished. Additionally, community leaders in urban areas only moderately supported community members. Such communities lacked people who could coordinate with government agencies. In our model, therefore, the resilience of urban communities exerted a relatively small effect on the resilience of working-age individuals. The findings indicate that community nurses are crucial in efforts to promote the mental health of working-age people and support their families (Belanche et al., 2021). They launch an intervention to promote the mental health of working-age people and their families to enhance resilience among these groups.

This study is limited in that it was conducted only in Bangkok, rendering it unrepresentative of the population of the entire country. The study recommends sampling economically important metropolitan areas to gain greater representation of the working-age population. Subsequent studies should undertake a more in-depth consideration of the factors involved to provide a more exhaustive explanation of variances in resilience. Researchers should also investigate the situations faced by other age groups, such as the elderly and teenagers, or adopt a longitudinal or mixed-methods approach to gain more comprehensive and nuanced insights into the evolving dynamics of resilience over time.

Conclusion

In this work, the causal model of working-age individuals in urban communities addressed individual mental health as well as family and community resilience, and it showed that these aspects directly affected the resilience of the population of interest during the COVID-19 pandemic. The hypothesized model, evaluated against the collected data, showed that the family resilience path had the greatest influence on the resilience of employable individuals in urban areas. It is important to emphasize the significance of incorporating family resilience as a central component into intervention strategies aimed at supporting people of working age. Promoting resilience within families involves building strong relationships, fostering open communication, and creating a supportive environment.

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