administrative sciences

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Fostering Antifragility: What Policymakers Should Know About Individual Resilience in Romania

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Abstract: Recent studies document a disappointingly low impact of resilience interventions and policies. This prompts us to revisit the formation of perceived individual resilience using a country-representative sample of 1500 adults. Our study explores how this perception is shaped by family resilience, community resilience, and several control variables like age, gender, risk aversion, and the perception of immediate environmental safety. Unlike traditional methods, we employ the PLS-PM methodology and WarpPLS 7.0 software. Our key findings document non-linear dynamics with varying degrees of magnitude, significance, and effect sizes. The three dimensions of family resilience (social trust, shared beliefs and support, and family organization and interaction) are the most significant predictors of community resilience. These non-linear relationships might explain occasional declines in individual resilience, linking our findings to those of previous studies. We contend that resilience policies and interventions are not unlike risk management, and therefore policymakers should be aware of diminishing marginal returns.

Keywords: resilience interventions; public policies; individual resilience; non-linear dynamics

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Received: 13 April 2025
Revised: 5 June 2025
Accepted: 17 June 2025
Published: 19 June 2025

Citation: Vâlsan, C., Druică, E., & Aligică, P. D. (2025). Fostering Antifragility: What Policymakers Should Know About Individual Resilience in Romania. *Administrative Sciences*, *15*(6), 236. https://doi.org/10.3390/admsci15060236

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1. Introduction

Since the early 2010s, political decision makers have answered the heightened anxiety and concern triggered by world events with a vigorous mix of policies backed by the equivalent of hundreds of billions of dollars in public spending. Over a relatively short period, resilience—the ability to cope in the face of adversity—has become the focus of both academic research and public policies. Under the broad umbrella of public policies, we include any purposeful action sanctioned, endorsed, and/or financed by central or local governments, either directly or indirectly, with the stated goal of assisting, supporting, or improving individual and/or community resilience.

The confluence between academic research on resilience and public policies is emerging as one of the more interesting areas of inquiry (Manciaux, 2001; Vickers & Kouzmin, 2001; Williams et al., 2017; Haldane et al., 2021; Kaye-Kauderer et al., 2021; Bryce et al., 2022; Zhang et al., 2022). A recent number of systematic surveys and meta-analysis studies attempt to determine the effectiveness of public policies and resilience interventions and find that their impact is rather middling (Ferreira et al., 2021; Joyce et al., 2018; Macedo et al., 2014). To our knowledge, there are no credible or satisfactory explanations for this state of affairs. We note, however, that some authors have already suggested that the correlation

among individual, community, and national resilience (Aldrich & Meyer, 2015; Ali et al., 2010; Eshel et al., 2020) might not be as high as previously considered (Kimhi, 2016). This might contribute to the results mentioned above, but it is not clear what the mechanisms are behind this low correlation.

In this paper we set out to revisit the determinants of individual resilience in a sample of Romanian respondents by incorporating the latest theoretical and methodological advances. We focus on the predictive significance of five dimensions of community resilience, three dimensions of family resilience, and several control variables, including levels of risk aversion, age, and gender. We are careful to acknowledge that local idiosyncrasies and cultural particularities should be considered when discussing the results of our study. Romania is currently among the poorer countries in the European Union, and represents a society with a historically low level of social capital. This combination of low social trust, a high level of suspicion (and even paranoia), and a surprisingly high level of credulity has been referred to as "Mioritic Syndrome" (Vâlsan et al., 2024).

We strive to bring much needed clarity on the magnitude, significance, effect size, and nature of the relationship between individual resilience and its antecedents. The main contribution of our research is threefold: (1) we are able to document non-linear relationships with varying degrees of intensity, statistical significance, and effect size; (2) we are able to link our results to the findings of other studies focused on the low effectiveness of policy interventions; (3) contingent on being able to generalize our findings, we provide palpable implications for public policies and interventions.

Although cultural peculiarities might very well drive some of our findings, it should be mentioned that most of our results are relatively in line with those of other studies. The findings that distinguish our research from other papers pertain to the aforementioned non-linearity of the relationships among individual resilience and their determinants. The main point in our discussion and interpretation is that resilience interventions can be conceived as an exercise in risk management (Sharpe, 1972; Stulz, 1996, p. 2), and therefore policymakers should recognize that risk management has diminishing returns. There are many resorts that can lead to a reduction in the marginal effectiveness of individual intervention and policies. Among them, the most powerful is the non-linearity of relationships documented here, suggesting that when acting over certain ranges, and in combination with other predictors, the impact might be a decrease rather than a strengthening in individual resilience. For example, investing resources towards improving leadership and preparedness against the backdrop of declining social trust and a dismal perception of leadership leads to a decline in resilience.

We conclude that spending more resources without an in-depth understanding of the social and cultural context at hand gives no guarantees of effectiveness. In spite of good intentions, one cannot deliver an adversity-free world, and it is all too easy to miss the mark on public policies. The danger is that, instead of building individual resilience, public policies and interventions might end up temporarily shielding individuals from adversities. A false illusion of security and protection might act against individual resilience and not in its favor. We recommend that future resilience interventions and public policies be preceded by a more robust economic assessment in order to ascertain the cost and benefits as realistically as possible, using the insights and findings of the reviews and studies mentioned in this current research.

Our paper is structured as follows: In the next section, we overview how various jurisdictions handle resilience-building policies and public spending, and provide a short institutional and theoretical background. In Section Three, we discuss the knowledge gap and the motivation of our research. In Section Four we explain the development of our

model. In Section Five we discuss our data and methods and report the main results. In Section Six we discuss and interpret our results, and in Section Seven we conclude.

2. Background

The resilience industry is a multi-billion-dollar government business worldwide. All major industrialized countries have an elaborate mix of policies and interventions aimed at strengthening and promoting resilience on multiple levels.

Policy interventions cover a wide range of public initiatives, including, but not limited to awareness-raising campaigns, education programs, social assistance programs, the provision of various specific resources and/or services to groups and/or specific individuals, etc. Obviously, these initiatives are pursuant from policy decisions, strategic plans, and action plans put forward by various government agencies, and require the allocation of financial and human resources, often earmarked for very specific objectives.

In the European Union, resilience policy initiatives pertain chiefly to crisis response. The EU Civil Protection Mechanism, with its Emergency Response Coordination Centre, manages the European Civil Protection Pool, representing a multi-billion-euro portfolio of real and financial assets that are activated in case of emergencies, such as pandemics, natural disasters, and many other crises. Not surprisingly, the most significant activations of its assets since 2020 have been due to the COVID-19 pandemic, the war in Ukraine, and devastating forest fires in various European countries. In 2021, the European Commission has also adopted its Cohesion Policy with a budget of EUR 392 billion[1], aimed at achieving a broad range of resilience-related social, political, and economic goals.

In the US, the Administration for Strategic Preparedness and Response (ASPR) manages a wide portfolio of resilience-related resources and policy initiatives. In 2025, this federal agency has a USD 3.8 billion discretionary budget aimed at addressing and accessing the functioning needs of at-risk individuals, including, but not limited to, older adults, people with disabilities, minorities, immigrants, young mothers, homeless individuals, and many others[2]. This is above and beyond the USD 20 billion already allocated to the U.S. Department of Health and Human Services.

Alongside ASPR, The Federal Emergency Management Agency (FEMA) administers the National Response Coordination Center and Center for Domestic Preparedness. FEMA manages over USD 30 billion in annual funding aimed at disaster relief and resilience building.

Canada's National Adaptation Strategy[3] is aimed at achieving comparable objectives. In Canada, even larger cities, such as Toronto[4], Montreal[5], and Vancouver[6], have their own resilience strategies, relying on dedicated funds. Most countries have either an agency or public policy program geared towards resilience, either as a stand-alone objective or combined with other similar social objectives.

Romania already has a National Recovery and Resilience Plan, approved by the EU in late 2023, providing some EUR 28.5 billion, mostly in order to mitigate the adverse socio-economic effects of the COVID-19 pandemic, but also including other resilience objectives. In addition, Romania has taken steps towards updating and improving its Resilience and Emergency Response Project. It is worth mentioning that Romania has an up-to-date Emergency Response Structure, in which the roles of various offices and departments are clearly defined: The Prime Minister oversees a National Committee of Emergency Situations under the auspices of the Ministry of Internal Affairs. Its actions are coordinated and integrated with Ministerial Committees of Emergency Situations, which in turn rely on Ministerial Operating Centers in tandem with the National Centre for Command and Integrated Management (International Bank for Reconstruction Project Appraisal Document on a Proposed Loan to Romania for Improving Resilience & Emergency Response Project, 2019). But how effective are all these initiatives and programs?

One important systematic review of recent studies is that by (Ferreira et al., 2021). The review spans a full decade, 2010 to 2020, and investigates 38 papers that measure the impact of policy interventions meant to strengthen individual resilience, mostly interventions related to mental health and other medical conditions.

In the words of the authors, "The quality of most of the studies was fair, with no studies demonstrating excellent quality". Of the 38 studies under consideration, Ferreira et al. (2021) point out that only 25 report results that can be considered significant. Nonetheless, the authors are very guarded when characterizing the robustness of findings, calling them "encouraging" (p. 9). Even studies finding significant results suffer from control group deficiencies, negatively impacting internal validly. The results do not allow one to conclude that "improvements in resilience scores necessarily translate into resilient individuals in the face of an adverse event" (p. 12).

A meta-analysis of 111 studies identified only middling beneficial effects associated with resilience interventions (Joyce et al., 2018), and these conclusions were presented with numerous caveats. An earlier systematic review by (Chmitorz et al., 2018) was not able to assess the benefits of resilience interventions and policies with a reasonable degree of certainty. The authors felt compelled to suggest ways to improve the methodology of survey studies, noting that the current methods associated with training protocols and procedures are not suitable for assessing the efficacy of interventions.

Another systematic review of 13 intervention studies (Macedo et al., 2014) found that, although improvement in outcomes are documented in several papers, only 7 provided evidence of efficacy. Again, all these results come with important caveats regarding the design, implementation, and procedures measuring the effectiveness of the interventions. Other authors (Bonanno & Diminich, 2013) are more candid and warn against the inefficiency and even harmfulness associated with certain types of large-scale policies.

There appears to be some incongruence between the magnitude of these numerous policies and interventions aimed at strengthening individual resilience and the modest evidence legitimizing the implementation of these policies. Resilience interventions and resources might well account for over USD 1 trillion of taxpayers' money worldwide, often overlapping in objectives and intertwining resilience with equity, sustainability, social justice, and access to health care. The imbalance between the sheer amount of resources deployed and the inconspicuousness of the results is somewhat puzzling. It has become clear that the impact of these policies and interventions is probably not as large as desired.

Perhaps investing in resilience is a process with diminishing returns, which could be due to a variety of factors and constraints. The inadvertent misallocation of resources could succeed at entrenching a huge bureaucratic apparatus with an interest in managing these resources. This situation could generate significant agency costs. However, this hypothesis is not easily testable.

There could also be something about the relationship between individual resilience and its determinants that we do not understand correctly. Based on the accumulated evidence (Kimhi, 2016) points out that the correlation between community and individual resilience is surprisingly low. Other authors (Sippel et al., 2015) consider that the dynamic between resilience and its determinants is influenced by context and local culture.

This is where our study strives to fill an important knowledge gap. We revisit the relationship between individual resilience and its antecedents to bring clarity on the apparent puzzling lack of efficacy of interventions and policies. The novelty of our research is given by (a) the PLS methodology refinement, (b) the non-linearity in the relationships between individual resilience and its predictors, (c) the generalization of results and discussion of implications for public policies and interventions.

We also note that all the studies mentioned earlier investigate a relatively complex mix of individual and community resilience interventions. We are cognizant of the fact that all forms of resilience (individual, family, community, national) have a common thread, and it becomes hard to disentangle the specific impact of personalized interventions.

3. Development of Model

There is no broad consensus with respect to the definition of individual resilience. For example, Tarter et al. (1999) consider individual resilience a trait, yet Luthar et al. (2000) contend that it is mostly an outcome. There is no unified approach to measuring resilience, only a variety of instruments that overlap to a certain degree, (Ahern & Galea, 2006; Connor & Davidson, 2003). We find the approach of (Liu et al., 2017) among the most pertinent because it considers resilience a dynamic, multi-dimensional, multi-system process involving the long-term interaction of individuals with their socio-ecological context.

The authors propose three concentric layers of individual resilience: a hard resilience core, driven by internal factors (traits); an internal resilience layer, shaped by interpersonal interaction; and an outer, external layer, driven by socio-ecological factors, including, but not limited to, economic and social resources funneled by policymakers. When developing our model, we took into account both the developmental and the constructionist perspective. This had the advantage of integrating the socio-contextual factors and the ability and willingness of individuals to navigate and negotiate resources across multiple systems and layers of systems (Cicchetti & Toth, 2009; Ungar, 2012).

The relationship between community and individual resilience has been documented quite extensively. Individuals are intertwined in the fabric of their communities via a complex dynamic in which psychological and environmental constraints play a major role (Aldrich & Meyer, 2015; Ali et al., 2010; Eshel et al., 2020; Kimhi, 2016). We obviously hypothesize that individual resilience is predicted by community resilience.

H1. *There is a positive relationship between individual resilience and community resilience.*

It has been already shown there is also a complex dynamic between the resilience of families, which represent precursors of the larger communities from which they emerge (Houston, 2018), and the resilience of individuals. This is only natural if one considers families as a first training ground for the socialization of children and young adults. It is in the midst of their families where individuals begin to learn emotional self-regulation (Finklestein et al., 2022). They also learn to cope with incremental constraints and hardship, internalizing a wide array of adaptive behavior while still shielded by a relatively safe environment (Chen et al., 2021; Hadfield & Ungar, 2018; Ungar, 2016).

Communities manifest greater resilience when their individual members are resilient. We should be able to find the empirical relationship between individual and family resilience to be bidirectional (Acosta et al., 2017). The Italian version of the Walsh Family Resilience Questionnaire (Walsh, 2016) appears to be the best instrument for capturing the three main dimensions: family organization and interaction, shared beliefs and support, and social resource utilization (Rocchi et al., 2017). We therefore hypothesize that all three domains of family resilience act as predictors of individual resilience, and we expect positive relationships.

H2. *Family organization and interaction is positively related to individual resilience.*

H3. *Shared beliefs and support are positively related to individual resilience.*

H4. *Social resources utilization is positively related to individual resilience.*

Risk aversion has emerged as one of the more important predictors of resilience because it is associated with internalizing the negative emotions and attitudes associated with adverse events (Egeland et al., 1993; Fletcher & Sarkar, 2013). The role of risk aversion in the emergence of cohesion among community members and the improvement of adaptability maintaining positive functioning has been identified and documented before (Hintze et al., 2015). The perception and advanced representation of negative outcomes have been associated with successful emotional and psychological recovery in the wake of traumatic events (Waugh et al., 2008). We therefore hypothesize that risk aversion is a significant predictor of individual resilience.

H5. *Risk aversion is negatively related to community resilience.*

The sense of danger is another concept closely associated with risk aversion, but nevertheless distinct. The relationship between the sense of danger and community resilience has already been shown to be significant (Eshel et al., 2020; Kimhi et al., 2023; Kimhi & Ryan, 2018). The experience of danger can be manifested in various ways, yet previous research has identified a general sense of worry (Pike, 2019) and a fear of walking at night (Scorgie et al., 2017) among the more common determinants. We hypothesize that worry and a fear of walking at night might be significant predictors negatively influencing individual resilience (Tabibnia & Radecki, 2018).

H6. *Worry is negatively related to community resilience.*

H7. *Fear of walking at night is negatively related to individual resilience.*

Religiousness is a well-documented predictor of resilience. The literature pertaining to the role of religion in building community cohesion, generating social capital, fostering trust, increasing productivity, and strengthening resilience is extremely robust and frequently cited (Batmaz & Meral, 2022; Fukuyama, 1995; Lee et al., 2013; Rahmawati, 2014; Weber et al., 2002). For the sake of simplicity, we confine ourselves to just a few citations, because an exhaustive survey of the literature would be too lengthy.

H8. *Religiousness is positively related to individual resilience.*

To account for all possible confounding factors, we consider the commonly used socio-demographic predictors such as age, gender, residence, education and income as control variables (see for instance (Bonanno et al., 2007; Kimhi et al., 2010; Kimhi et al., 2013; Irasanti et al., 2023; Markantoni et al., 2019) among many others). The final model is presented in Figure 1.

With the exception of religiousness, we do not posit separate determinants to account for cultural influences. Almost all the determinants in our model capture the impact of culture. Cultural factors are already embedded in several dimensions, such as social trust, collective efficiency, place attachment, leadership, religiousness, shared beliefs and support, family organization, etc. Cultural factors act through these determinants; they do not represent a separate category. Alongside psychological factors, they form a dynamical system, in constant interaction, without the possibility of being disentangled from each other.

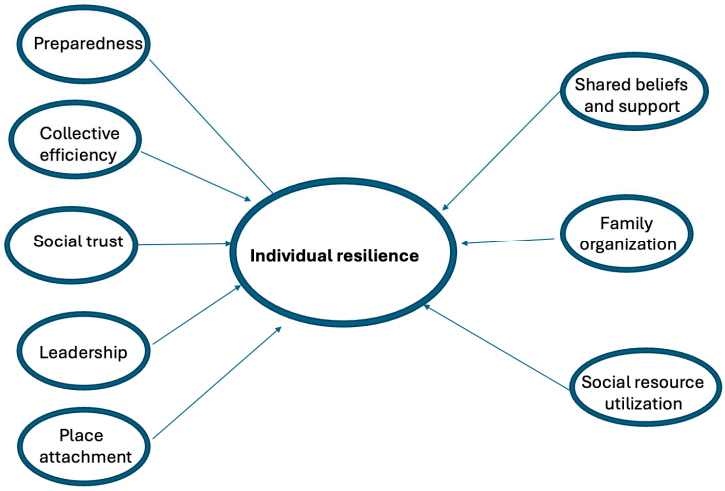


Figure 1. Conceptual model of individual resilience (controls not included).

4. Data, Measurement, and Methods

4.1. Data

Our sample consisted of 1500 Romanian adult residents aged 18 years or older. The data was obtained from INSCOP Research, which conducted a pen-and-paper survey between 14 September and 5 October 2022. The sampling method was multi-stratified and probabilistic with a margin of error of 2.5%, and the resulting sample aimed to be representative of the broader Romanian population. During the survey, no personal information was recorded, and participation in the study was entirely voluntary, based on the consent provided by participants at the outset. Everyone had the option to stop participating in the survey at any time during its duration.

The municipalities, towns, villages, hamlets, etc., participating in the study were chosen at random. Within each town, municipality, etc., each street was chosen at random. If residents did not answer the bell, the operator attempted two other visits on two different days at different hours. If the address was not residential, it was replaced at random with another one. Within each residence, the person to answer the questionnaire was also chosen at random (for example, the person with the most recent birthday, etc.). If the attempt was met with a refusal, another person or another address was chosen, also at random. The operators recorded their answers on paper and transferred them subsequently to tablets and smartphones. The duration of each questionnaire was about 30 min. Before the questionnaires were administered, INSCOP conducted a rigorous instruction of their regional coordinators and questionnaire operators. While the questionnaires were administered, all operators were monitored and contacted every other day to ensure rigor and help with troubleshooting. After collection, all data was cross-checked and referenced against various control keys to ensure consistency. At least 15% of the respondents were contacted after the survey to confirm their participation and veracity.

4.2. Measurement

The model is presented in Figure 1. We considered the five dimensions of community resilience (preparedness, collective efficiency, social trust, leadership, place attachment), three dimension of family resilience (shared beliefs and support, family organization and interaction, social resource utilization) and a host of control variables (risk aversion, fear of walking at night, religiousness, worry, age, gender) to predict individual resilience.

The work of (Connor & Davidson, 2003) provides one of the most used instruments for measuring individual resilience. For simplicity, in this research, we employed a 2-item version, as used by (Vaishnavi et al., 2007). We also employed an adaptation of the

Walsh Family Resilience Questionnaire (Walsh, 2003), slightly reduced to only 26 items and used for a sample of Italian patients (Rocchi et al., 2017). We thus posited three latent constructs to account for family resilience: shared beliefs and support, family organization and interaction, and social resource utilization.

For the assessment of community resilience, we used the Conjoint Community Resilience Assessment Measure (CCRAM henceforth) along five distinct first-order, reflective constructs: leadership, collective efficacy, preparedness, place attachment, social trust, and social relationship (Cohen et al., 2013; Kimhi et al., 2013; Leykin et al., 2013).

We did not, however, combine these dimensions into a community resilience score as a formative second-order latent construct, as performed in other studies (Druică et al., 2025), but rather used the five distinct latent constructs as individual predictors.

We obviously included age, gender, education, and income level as control variables. As already explained earlier, we also included worry, fear of walking at night, risk aversion, and religiousness as predictors of individual resilience. The statistical significance of these antecedents has been repeatedly and convincingly established by previous studies; hence, we adopt them here as control variables as a matter of routine.

To measure worry, we employed three items ("To what extent are you worried: (1) because of the financial situation of your family, (2) because the war in Ukraine may expand beyond Romanian's borders, (3) because COVID-19 might represent a threat to your personal health"). Fear of walking at night was measured with the help of three items ("To what extent do you fear walking at night (1) on your street, (2) in your neighborhood, (3) in your city").

Risk aversion was assessed based on three items taken from the General Risk Aversion scale (Mandrik & Bao, 2005) with the following content: "I do not feel comfortable about taking chances; I prefer situations that have foreseeable outcomes; I feel comfortable improvising in new situations". If no other specifications were made, the measurements were taken using a 5-point Likert scale, where 5 meant completely agree/to a very high extent and 1 meant completely disagree/to a very low extent. Religiousness was a binary variable that had only two possible answers yes/no ("Do you consider yourself a religious person?"). The full questionnaire is available in the Supplementary Materials.

4.3. Method

To estimate our conceptual model, we used Partial Least Square Path Modeling (PLS-PM) through WarpPLS 7.0 software. Unlike the covariance-based modeling approach that is often used when latent variables are involved in a conceptual framework, PLS-PM is a variance-based modeling approach aiming at maximizing the explained variance of the outcome variable—in our case, individual resilience—as explained by its antecedents. Any PLS-PM model consists of the outer model (or measurement model) and the inner model (or the structural model). The outer model measures the relationship between each latent construct and the corresponding items, while the inner model tests the path relationships among latent variables, as presented in the conceptual model. The use of PLS-PM in this context has several advantages over the traditional methods that rely either on confirmatory analysis, or on regression. As a predictive method, PLS-PM goes beyond merely testing if data obey a pre-specified theory and provides insights for informed interventions. Second, although regression analysis lies at the core of PLS-PM, this method allowed us to integrate regression-estimated relationships among the latent constructs. Last, but not least, the implications of our research rely heavily on a unique capability provided by WarpPLS 7.0 to unveil, based on a non-parametric estimation, the functional form that best describes the actual relation between each antecedent and the dependent variable. This is an added

value to the traditional regression-based approach that assumes the relations accounted for in the model are linear.

5. Results

5.1. Sample Description

Among the 1500 Romanian respondents aged 18–89 (mean = 46.68, median = 46, sd = 16.16) there is a good gender balance, with 51% of the participants being females. Most of the sample consists of ethnic Romanians (91.3%). Of the total, 64.1% of participants are married and 21% hold an undergraduate university degree. There is also balanced rural–urban representation, with 43% of participants being rural residents. In terms of income, nearly 43% of respondents report that they have enough to satisfy their basic needs, and around 18% perceive that their income is enough for all their wants. The sample structure is summarized in Table 1 and was cross validated with official data from the Romanian Institute of Statistics, showing that it mirrored the structure of the Romanian adult population, as intended.

Table 1. Sample description.

Quantitative Variables					
	Min	**Median**	**Mean**	**Max**	**SD**
Age	18	46	46.68	89	16.16
Qualitative variables					
Sex	Female 51%	Male 49%			
Education	Primary education or less 14.4%	Secondary education 59%	Undergraduate 20.6%	Graduate 6%	
Residence	Rural 43%	Urban 57%			
Income	Below subsistence 9%	Barely enough for subsistence 33%	Enough for subsistence but not for luxury goods 40%	Enough for a few luxury goods but with restrictions 15%	Enough for all we want 3%

The latent construct sample statistics are presented in Table 2. All the values are standardized in order to allow for comparisons and the interpretation of the relationships among variables. Most median values are close to zero, which represents the neutral point where respondents neither agree nor disagree with the questions they were asked to evaluate.

Table 2. Latent constructs descriptive statistics.

	Min	**Max**	**Median**	**Skewness**	**Kurtosis**
Preparedness	−1.833	1.815	−0.009	−0.213	−0.785
Collective Efficiency	−2.271	1.667	0.171	−0.435	−0.363
Leadership	−1.800	1.767	−0.002	−0.256	−0.826
Place Attachment	−2.856	1.055	0.078	−0.861	0.205
Social Trust	−2.682	1.637	0.028	−0.529	0.126
Shared Beliefs and Support	−4.219	0.918	0.073	−1.205	1.639
Family Organization	−3.575	1.283	0.068	−0.619	0.132

Table 2. *Cont.*

	Min	Max	Median	Skewness	Kurtosis
Social Resource Utilization	−3.179	1.615	0.045	−0.477	0.217
Individual Resilience	−3.443	1.254	0.080	−0.381	−0.505
Risk Aversion	−4.200	1.219	−0.011	−0.884	1.036
Fear	−0.996	2.316	−0.168	0.695	−0.554
Worry	−2.711	1.757	0.035	−0.372	−0.162

5.2. The Outer Model

Table 3 shows that all the latent constructs show good measurement reliability. The composite reliability index is higher than 0.7 in all cases of reflective measurement (worry and fear of walking at night derive from formative measurement). Moreover, the average variance extracted exceeds 0.5 in all cases.

Table 3. Convergent reliability.

	Composite Reliability	Cronbach's Alpha	Average Variance Extracted
Preparedness	0.924	0.836	0.859
Collective Efficiency	0.906	0.793	0.829
Leadership	0.953	0.934	0.835
Place Attachment	0.901	0.780	0.820
Social Trust	0.923	0.833	0.857
Shared Beliefs and Support	0.918	0.865	0.788
Family Organization and Interaction	0.838	0.709	0.635
Social Resource Utilization	0.816	0.662	0.597
Individual Resilience	0.910	0.803	0.836
Risk Aversion	0.826	0.682	0.613
Fear (Formative Measurement)	0.978	0.966	0.936
Worry (Formative Measurement)	0.810	0.647	0.586

Arguments in favor of convergent and divergent validity are presented in the Supplementary Materials.

5.3. The Structural (Outer) Model

The results of the structural model are presented in Table 4. Social trust, shared beliefs and support, family organization and interaction, risk aversion, and age appear significant at the 1% level. Preparedness, fear of walking at night, worry, and especially social resource utilization are significant at the 1% and 5% levels, respectively. Leadership is marginally significant at the 10% level. Collective efficiency, place attachment, religiousness and gender are not at all significant.

Table 4. Estimated coefficients of structural model.

Individual Resilience	Estimated Coefficient	Effect Size
Preparedness	0.043 * (p = 0.047)	0.006
Collective Efficiency	−0.005 (p = 0.427)	0.000
Leadership	0.038 (p = 0.069)	0.006
Place Attachment	0.018 (p = 0.248)	0.002

Table 4. *Cont.*

Individual Resilience	Estimated Coefficient	Effect Size
Social Trust	0.115 *** ($p < 0.001$)	0.010
Shared Beliefs and Support	0.153 *** ($p < 0.001$)	0.062
Family Organization and Interaction	0.151 *** ($p < 0.001$)	0.057
Social Resource Utilization	0.049 * ($p = 0.030$)	0.014
Risk Aversion	0.226 *** ($p < 0.001$)	0.087
Fear of Walking at Night	−0.068 ** ($p = 0.004$)	0.017
Worry	−0.067 ** ($p = 0.005$)	0.010
Age	−0.171 *** ($p < 0.001$)	0.032
Gender	0.027 ($p = 0.148$)	0.000
Religiousness	0.027 ($p = 0.148$)	0.002
R2/Adjusted R2	30.3%/29.6%	
Tenenhaus GoF	0.496 (large)	

*—$p < 0.05$; **—$p < 0.01$; ***—$p < 0.001$.

Several best-fitting curves and segments for multivariate relationships are presented in Figures A1 and A2a–c in Appendix A, and as one can easily see, they are all non-linear. The implications of this non-linearity are discussed in the following section.

6. Discussion of Results

As expected, all three dimensions of family resilience are significant predictors of community resilience. While the effect sizes are in the actionable range, there are real-life limitations as to the nature of policy interventions that may be used to boost family resilience. The biggest surprise, however, comes from the lack of significance associated with the majority of community resilience dimensions. With the exception of social trust (with a higher contribution coefficient, significant at the 1% level) and preparedness (with a very modest contribution coefficient, significant at the 5% level), all other dimensions are not at all significant. Leadership is significant at the 10% level. Moreover, the effect sizes associated with all five dimensions of community resilience are outside the range of actionability. Hardly any of these variables warrant policy intervention, a result that seems to explain the apparent low return on investment and lack of effectiveness associated with the massive government spending discussed in the introduction of this paper.

This model has been estimated under the default assumption of linearity. A clearer and more complex picture emerges upon inspecting the lack of linearity in these relationships. Consider the relationship between preparedness and individual resilience. Both the estimated coefficient and level of significance change when analyzed over three distinct ranges. Over the first, and the most encompassing range, the relationship is negative and significant. Beyond a certain range, which looks like a global minimum, however, the relationship becomes positive, yet still statistically significant. It appears as though not having enough preparedness is sapping individual resilience. Hence, it is important to determine where the average respondent is with respect to the measurement scale.

The same can be said about leadership and social trust. Both relationships are non-linear and show a global minimum. Initially negative, beyond a certain range, both seem to show a positive relationship to individual resilience. Taken over each segment separately, these relationships are statistically significant.

In the case of leadership, it appears that over the initial range, leadership has an adverse impact on resilience. Over the second range, better leadership leads to better individual resilience outcomes. Over the last range, we observe yet again the beginning of a very abrupt and significant decline in individual resilience associated with higher leadership values. It is conceivable that, beyond a certain point, the respondents react negatively to assertive leadership.

The relationship between social trust and individual resilience is also non-linear and significant, yet the effect size is very small. Over the initial range, an increase in social trust leads to lower individual resilience. Beyond a certain point, representing a global minimum, the relationship becomes positive. Unlike leadership, higher levels of social capital do not appear to lead to a reversal of direction. Collective efficiency and place attachment also show non-linear relationships to individual resilience, but their statistical significance level remains low over the entire range analyzed.

Shared beliefs and support represent cultural and personal benchmarks shaped by the evolution of the social fabric. Family organization and interaction are also driven by cultural elements and cannot be easily changed without heavy-handed and intrusive social policies, whose effectiveness is questionable to say the least. The only factor that might be molded through policies is social resource utilization. Yet its effect size puts it outside the range of consequential interventions.

Policy interventions geared towards strengthening resilience by acting on its determinants, mostly community resilience, might not be as effective as desired. Of the two, only preparedness can be in principle driven by purposeful, targeted policies.

The interpretation of these non-linear relationships must also be understood in the context of the median standardized values of each latent construct. For example, if the standardized median preparedness response is -0.009 (as shown in Table 2), individual resilience finds itself at a relatively low point. Not only that, but given the shape of the non-linear relationship, previous attempts and resources dedicated towards increasing resilience would have most likely weakened it instead of strengthening it.

The same is true of the relationship between social trust and individual resilience. With a standardized median of 0.028, social trust puts individual resilience at a relatively low point. All efforts and resources previously spent on improving the perception of social trust might have adversely impacted individual resilience instead of shoring it up. Moreover, social trust is not a variable that can be changed overnight, regardless of the political will and determination of policymakers. Social trust is a long-term cultural parameter, forged over generations. It is hard to build and easy to squander. There is an emerging consensus that the historically high stock of social trust responsible for economic growth and prosperity is wanning (Clark, 2015; Larsen, 2013; Mewes et al., 2021; Putnam, 2001; Twenge et al., 2014; Weiss et al., 2019).

We can reasonably speculate that depleting social trust is a context that exacerbates free-riding and inhibits collective action. One can argue that increasing resource allocation towards greater preparedness against the backdrop of declining social trust will most likely have no discernable effect on resilience. Romania is traditionally a society plagued by relatively low social trust. It is perhaps this low social trust that might be partially responsible for the lack of significance and small effect size of a good number of determinants.

The relationships between risk aversion, worry, fear of walking at night and individual resilience are consistent with expectations and significant, yet only risk aversion is actionable. A fine line must be drawn here between several related constructs that can be easily mistargeted by policy interventions. Risk aversion requires rational expectations and entails a calculated response aimed at minimizing the risk associated with a given outcome, or maximizing the outcome for a given level of risk. Risk aversion strengthens individual resilience through skillful risk management. On the other hand, hysteria and paranoia are associated with emotional distress and trigger suboptimal responses that result in lower resilience.

When addressing community preparedness, collective efficiency, place attachment, stress, the safety of communities, and most of all risk aversion, policymakers must exercise skill in order to avoid triggering panic and mass hysteria. The lessons of the COVID-19 pandemic clearly suggest that there is a very fine line to walk in order to trigger a rational and measured resilience response. This is easier said than done, and sometimes it is preferable to abstain from any action rather than triggering a reaction that is more harmful than beneficial.

7. Concluding Remarks

In this paper, we set out to revisit the relationship between individual resilience and its determinants in order to clarify why policy interventions appear to have such a weak impact. Among the predictors of individual resilience, we include the five dimensions of community resilience and the three components of family resilience. Our approach is grounded in the common view that the various levels of resilience are tightly interconnected.

Our results, however, appear to vindicate (Kimhi, 2016), who contends that there is limited knowledge about whether and to what degree there are mutual influences among the three levels of resilience, and if they represent truly independent structures. The expected predictors of individual resilience are either not statistically significant or, if they are, their effect sizes are too small to warrant policy intervention. In addition, we find a complex dynamic in which most if not all relationships appear non-linear, which represents the most important finding by far.

Most likely, this explains why the statistical significance is low over the entire range, although it is not entirely clear why effect sizes remain small. It matters where the constructs are on the standardized predictor's range and what direction they are moving in.

A combination of low or declining social trust, investments into make-shift preparedness, and leadership posturing could end up sapping individual resilience rather than strengthening it. Another undesirable combination would involve low or declining social trust and misguided resources that would trigger paranoia, hysteria, and conspiracies, instead of increasing risk awareness. Yet another consideration might be driven by incompetent efforts to exercise leadership in a cultural context in which there is a dismal perception of policymakers. A question crucial to linking these results to the pattern of relatively ineffective resilience interventions discussed at the beginning of our research pertains to the extent to which the results can be generalized. Romania is a country with a traditionally low level of social trust, a dismal perception of political leadership, and a strong tendency towards self-victimization we call "Mioritic Syndrome" (Vâlsan et al., 2024).

Ever since its accession to the European Union, social policies have entered a collision course with a more nationalistic streak, partially fostered by discontent caused by incompetence and corruption. Ironically, an above-average level of political suspicion and paranoia has morphed into a naïve predilection for authoritarianism and nationalism. Because many resilience interventions and policies have strong social justice undertones, the populace seems to react with deep suspicion towards what it perceives to be an attempt at dictating social policies by the European Union's multinational bureaucracy.

An important issue that future research would have to answer is whether public interventions and policies are missing the mark, or if they are indeed aimed at constructs such as genuine preparedness, collective efficiency, and quality leadership. It might well be the case that a good portion of the multi-billion-dollar packages spent on interventions and policies are merely creating an enduring bureaucracy that diverts most of these resources, and whose entrenchment partially depends on a predictable low level of resilience in need of perpetual strengthening.

Another point of concern is the billions of dollars spent on reaching out to vulnerable individuals and people at risk, while the definition of risk and vulnerability has constantly shifted, driven by political and ideological considerations. Our efforts to create safe spaces might have resulted in a false sense of security. As recent events have unfortunately demonstrated, there are no everlasting safe spaces from pandemics, wars of aggression, structural economic crises, and the ire of political bullies.

Perhaps, there must be a recognition that there are limits to how much social policies are able achieve. Without a doubt, investing in resilience is achieving reasonable results. The question is what is reasonable, and how much investment is optimal, before policy starts to undermine the very goals it sets out to achieve? The ecologically complex model of layered individual resilience used in this research suggests that, beyond a certain threshold, there is no supplanting of intrinsic drivers. Policymakers should take note that resilience building and risk management are associated with steeply declining marginal returns. Portfolio managers understand this very well. Diversifying, hedging, or buying insurance can quickly become prohibitively expensive (Sharpe, 1972; Stulz, 1996). There is a level of structural, immanent risk that no amount of money can eradicate. We contend that, sadly, one cannot engineer an adversity-proof society.

When committing significant resources towards policies and interventions, one should keep in mind that there is a fundamental difference between building up resilience and shielding individuals from adversities. Our policies should aim at the former, not the latter. This is where excessive spending can eventually undermine the very goal of strengthening resilience and ultimately become as harmful as having no commitment to resilience at all. We recommend that future resilience interventions and policies undergo a more robust screening process based on a realistic assessment of costs and benefits.

Supplementary Materials: The following supporting information can be downloaded at: https://www.mdpi.com/article/10.3390/admsci15060236/s1, Table S1: Correlations among l.vs. with sq. rts. of AVEs, Table S2: Combined loadings and cross-loadings; B: Questionnaire.

Author Contributions: Conceptualization, E.D., P.D.A. and C.V.; methodology, E.D.; software, E.D.; analysis, E.D.; resources, P.D.A.; data curation, E.D.; writing—original draft preparation, C.V. and E.D.; writing—review and editing, E.D., P.D.A. and C.V.; funding acquisition, P.D.A. All authors have read and agreed to the published version of the manuscript.

Funding: The APC was partially supported by Bishop's University.

Institutional Review Board Statement: The study was conducted in accordance with the Declaration of Helsinki and approved by the Ethics Committee of INSCOP Research (protocol code No 5/09.09.2022).

Informed Consent Statement: Informed consent was obtained from all subjects involved in the study.

Data Availability Statement: Data can be made available on request.

Acknowledgments: This work was supported by the project PN-III-P4-ID-PCE-2020-1076, "Resilience and stability in systems with polycentric governance. A theoretic, empirical and applied approach." The project was funded by de CNCS-UEFISCDI between 2021–2023, and implemented via ICUB, University of Bucharest. The publication of this paper has been made possible in part by funding received from Bishop's University.

Conflicts of Interest: The authors declare no conflicts of interest. The funders had no role in the design of the study; in the collection, analyses, or interpretation of data; in the writing of the manuscript; or in the decision to publish the results.

Appendix A

Figures A1 and A2a–c show the non-linear relationships between individual resilience and some of its predictors.

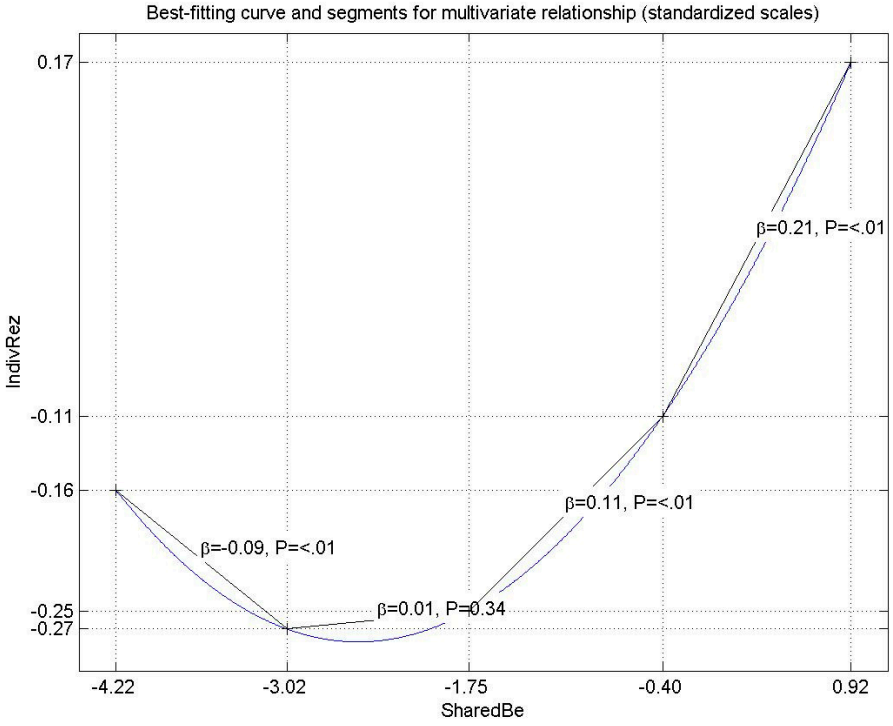
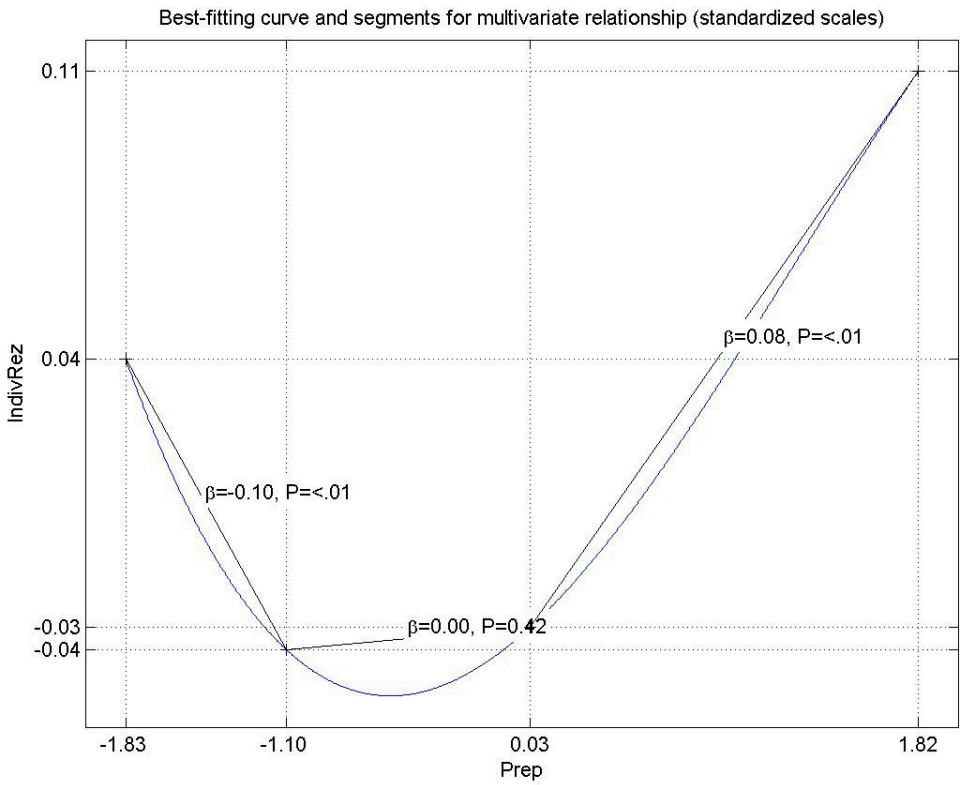
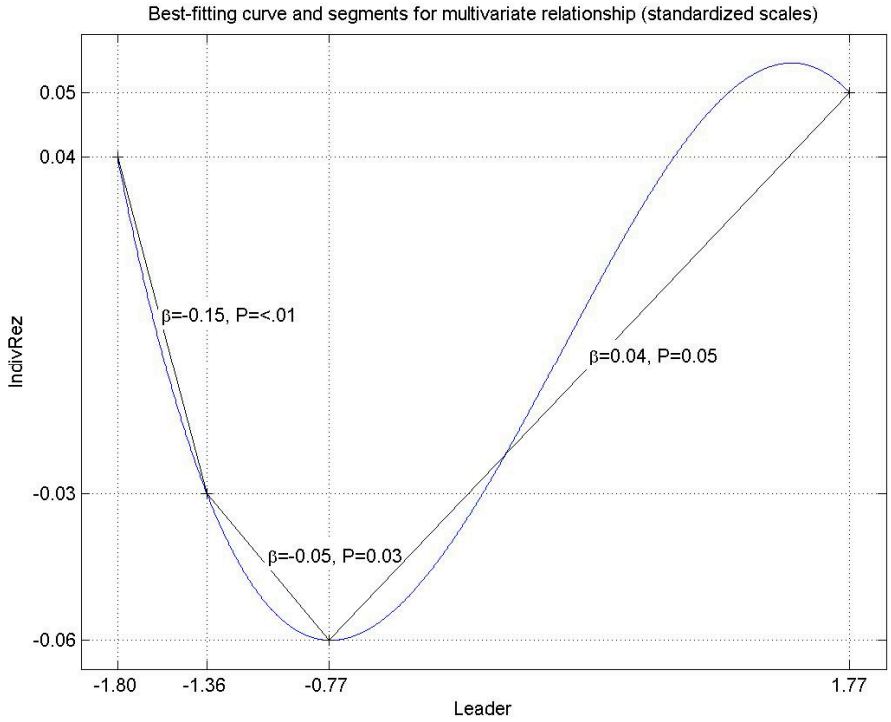


Figure A1. Family resilience and its relationship to individual resilience via shared beliefs and support.

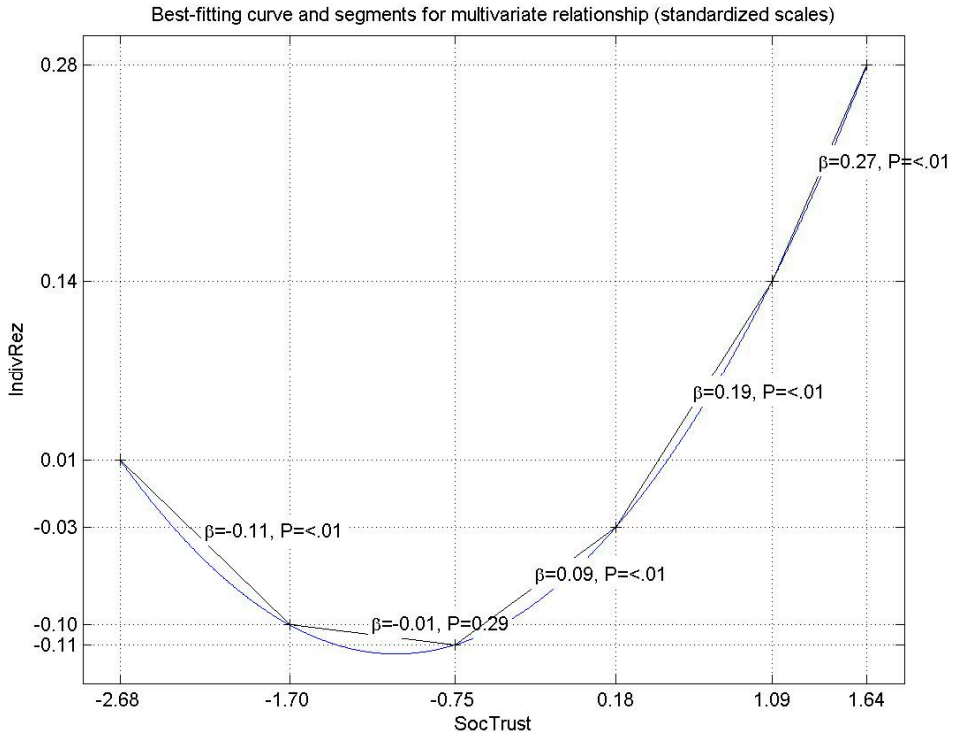


(**a**)



(**b**)

Figure A2. *Cont.*



(**c**)

Figure A2. (**a**) Community resilience and its relationship to individual resilience via preparedness. (**b**) Community resilience and its relationship to individual resilience via leadership. (**c**) Community resilience and its relationship to individual resilience via social trust.

Notes

1 Available Budget of Cohesion Policy 2021–2027, available at https://ec.europa.eu/regional_policy/funding/available-budget_en, accessed on 25 March 2025.

2 Fiscal Year in Brief, The US Department of Health and Human Services, https://www.hhs.gov/sites/default/files/fy-2025-budget-in-brief.pdf; accessed 2 February 2025.

3 Canada Adaptation Strategy, available at https://www.canada.ca/en/services/environment/weather/climatechange/climate-plan/national-adaptation-strategy/full-strategy.html, accessed on 20 March 2025.

4 Toronto's Resilience Strategy, available at https://www.toronto.ca/services-payments/water-environment/environmentally-friendly-city-initiatives/resilientto/, retrieved on 1 March 2025.

5 Montreal's Resilient City Strategy, available at https://resilient.dev.montreal.ca/assets/doc/strategie-montreal-ville-resiliente-en.pdf, accessed on 15 February 2025.

6 Resilient Vancouver, available at https://vancouver.ca/people-programs/resilient-vancouver.aspx, accessed on 26 March 2025.

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