Article

Families in Society: The Journal of Contemporary Social Services
1–21

DOI: 10.1177/10443894251412919
journals.sagepub.com/home/fis
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Adaptation of Community Resilience Scale: Its Association With Fear of Earthquake, Fragility of Happiness, Family Harmony, Family Functioning, and Psychological Adjustment

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Abstract

Community resilience is vital for psychological adjustment, fostering belonging and collective efficacy during crises. This study adapted the Community Resilience Scale into Turkish and examined its psychometric properties within an ecological and systemic framework. In Study: Part I ($N = 640$), validity and reliability were supported through confirmatory factor analysis, item response theory, and measurement invariance. In Study: Part II ($N = 1{,}281$), structural equation modeling and centrality network analysis showed that family harmony, family functioning, fragility of happiness, and fear of earthquake mediated the relationship between community resilience and psychological adjustment. Findings highlight the central role of family functioning in shaping individual adaptation in collectivist communities. Beyond theoretical and measurement contributions, the study offers implications for social work practice by guiding community-based interventions, strengthening family support systems, and informing resilience-oriented policies that enhance post-crisis well-being.

Keywords

community resilience, fear and crisis, natural disasters, fragility of happiness, family functioning, family harmony, psychological adjustment

Manuscript received: October 1, 2025; Revised: December 15, 2025; Accepted: December 16, 2025

Disposition editor: Cristina Mogro-Wilson

Introduction

Communities around the world face a wide range of collective traumatic experiences ranging from natural disasters to global pandemics, economic crises to social conflicts (Imperiale & Vanclay, 2021). Due to their level of risk, destructive potential and uncertainty, these events deeply affect not only the socioeconomic structure of societies but also the psychological integrity of individuals (Ciller et al.,

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2023). According to the ecological systems approach, individuals are under the simultaneous influence of different system layers, from the relationships they establish with their families at the micro level to the cultural norms and structural resources of the society they live in at the macro level (Darling, 2007; El Zaatari & Maalouf, 2022). Consequently, events occurring in different segments of society have the potential to affect the lives of individuals. In this context, it is important to evaluate the environment in which individuals live together with their resilience capacity (Jewett et al., 2021). This situation is explained by the concept of community resilience in the literature. Community resilience refers to the capacity of the macrosystem to withstand and recover from crises and it can shape the individual's psychological adjustment process through exosystemic resources such as social support systems, institutional trust and community-based sense of belonging (Berkes & Ross, 2012). As stated by Koliou et al. (2018), this multi-layered and intertwined system interaction expresses how the community to which the individual belongs reacts together against environmental stressors, which support resources they can access collectively and to what extent they can recover.

Community resilience within this systemic structure can affect the individual's psychological adjustment capacity both directly and indirectly by strengthening the individual's perceptions of trust, belonging and stability in his or her environment (Verbena et al., 2021). Psychological adjustment refers to the individual's capacity to give balancing and functional responses to stress, crisis or traumatic life events at emotional, cognitive and behavioral levels. This adaptation process is directly affected by the individual's internal resources (Skojec et al., 2025) as well as the relationships with the multilayered systems in the environment (Meijer et al., 2023). When considered within the framework of Ecological Systems Theory, psychological adjustment is shaped not only by the experiences of the individual at the microsystem level (Fan & Fan, 2021), but also by how these systems interact with each other (Giannotti et al., 2022), institutions (exosystem) and broader social and cultural norms (macrosystem) that the individual is not directly involved in but is exposed to the effects of (Vaughn & DeJonckheere, 2021). Research also shows that when the individual's having strong family relationships and the presence of institutions in the society that play an active role in times of crisis are considered together, this holistic structure can increase the individual's psychological resilience against crises (Panzeri et al., 2021). Therefore, psychological adjustment is not only an individual characteristic; it should be considered as an output of multilevel interactions that are transferred from broader systems to more specific systems.

The impact of community resilience on the individual is often mediated indirectly, through systemic and psychosocial contexts. According to the ecological approach, direct interaction between the microsystem and the macrosystem is limited; these two systems usually interact through common connection pathways and intermediary structures (e.g., families, groups of friends) (Goodwin et al., 2023). In this context, families, one of the closest mesosystems in which the individual is located, constitute a fundamental building block in the development of psychological adjustment (Wang et al., 2024). Research shows that harmonious and functional family structures are significantly related to individuals' mental well-being (Körün et al., 2025). Especially in times of crisis, the trust, mutual support and acting together skills of family members allow individuals to experience traumas in a less destructive way (Eales et al., 2021). The ability of the harmonious structure of the family to be effective in the lives of individuals in the microsystem is related to the functionality of families. Family functionality refers to the level of effectiveness of family members in functions such as responding to emotional needs, managing crises, and supporting socialization (Maurović et al., 2020). Functional family structures help the individual to perceive stressors in a more meaningful, manageable and predictable framework. Considering from an ecological systems perspective, strong family structures not only increase the individual's resilience at the micro level, but also positively affect the interaction with broader systems (e.g.,

mesosystems and exosystems such as school, community, health services), thereby strengthening the individual's overall adaptive capacity (Kim et al., 2023).

Besides macrosystem and mesosystem, personal characteristics of individuals, that is, microsystem characteristics, are also among the important factors for psychological adjustment. In particular, continuous crises at the chronosystem level challenge the psychological resilience of the individual temporally (Jonsson et al., 2024). Natural disasters, wars, terrorist incidents and epidemics are examples of these crises. In this context, individuals may develop a perception that the happiness process is fragile in the period they are in. The fragile happiness belief reflects the cognitive schemas that positive emotions in an individual's life are temporary, fragile or open to external threats. Such beliefs may cause the individual to have difficulty in maintaining well-being and to experience anxiety, alertness and loss of control after positive experiences (Wong & Yuen, 2023). Especially in the face of uncertainty or uncontrollable environmental stressors, this feeling of vulnerability may deepen and negatively affect psychological adjustment (Lambert et al., 2022). For individuals living in regions such as Türkiye, where many earthquakes have occurred and where the earthquake risk is high, intense fear of disasters that are likely to occur again (Cetin et al., 2024) and can create a state of constant alertness not only physically but also emotionally and cognitively (Nagai et al., 2022). This situation may cause a long-term and intense fear of earthquakes in individuals. In terms of ecological systems theory, such individual-level psychosocial stressors may also affect the interaction with broader environmental systems and weaken the individual's psychological adaptive capacity in a multidimensional intersystem manner (Keya et al., 2023).

The Present Study

The current literature on psychological adjustment mainly focuses on individual factors or direct traumatic events. However, holistic models that take into account the interaction of multi-layered systems in which the individual is involved are quite limited. In particular, models explaining the effects of macrosystem-level structural variables such as community resilience on individual psychological processes are insufficient; holistic models of how community resilience is linked to psychological adjustment through familial and individual mediators are limited. In addition, the need for valid and reliable measurement tools for community resilience also draws attention (Ardoin et al., 2023). On the other hand, studies on how culturally sensitive cognitive schemas such as fragile happiness are related to emotional regulation processes in the face of environmental stressors, especially in collectivist societies such as Türkiye, are limited. This study aims to address these conceptual and measurement gaps.

The study, which integrates ecological systems theory with the family systems approach, proposes a multi-systemic understanding of community resilience, suggesting that individual psychological adaptation is embedded within interconnected family and community structures. This model emphasizes the potential relationships between these systems during periods of collective stress, rather than treating them as separate levels. This integration contributes theoretically by framing community resilience not only as a contextual resource but as a dynamic process co-constructed through family functioning, perceived adaptation, and emotional regulation within a broader socio-ecological environment. Thus, this research advances resilience theory by emphasizing how microlevel (family) and macrolevel (society) systems mutually sustain individual adaptation in the aftermath of crises.

In Study: Part I, the Community Resilience Scale was adapted into Turkish and psychometric analyses were performed. In Study: Part II, by proposing a multilevel model within the framework of ecological systems theory, the simultaneous relationships of familial and individual mediating variables in the relationship between community resilience and

psychological adjustment were examined. In this respect, the study both increases the theoretical explanatory power and offers a new perspective on developing multilevel intervention strategies in practice.

In summary, this study offers a dual contribution to the literature. To begin with, it provides a rigorous cross-cultural validation of the Community Resilience Scale within the Turkish context using CFA, IRT, and invariance testing. Second, it tests a comprehensive multilevel model linking community resilience to psychological adjustment through family and individual mediators. Crucially, it is important to note that community resilience in this study is assessed through individuals' subjective perceptions of their community's capacity rather than objective structural metrics. This approach aligns with the ecological perspective, emphasizing that an individual's psychological adaptation is shaped by how they perceive and internalize the resources within their macro system.

Study: Part I

In the Study: Part I, confirmatory factor analysis (CFA) of the Community Resilience Scale was conducted. As in the original form, a CFA was conducted for the six-item forms of the scale. In addition, the scale was analyzed using reliability analysis, item-total correlations, measurement invariance and item response theory.

Method

Participants and Procedure

Study I included 640 participants, 68.8% of the participants were female and 31.3% were male. Data were collected from participants selected through convenience sampling. The mean age of participants was 23.56 ($SD = 6.31$ years, 18–48 years). Participants reported that 65.3% of the participants were single, 34.7% were married or engaged. In terms of marital status of their parents, 83.8% of the participants' parents live together, while 16.2% of the participants' parents are divorced. While 54.1% of the participants stated that they had experienced a disaster before, 45.9% stated that they had no such experience. According to the settlements where they grew up, 66.7% of the participants grew up in the city center and 33.3% grew up in rural districts. In terms of family structure, 71.1% grew up in nuclear family and 28.9% in extended family. Given Türkiye's relatively homogeneous ethnic composition, all participants identified as Turkish. This homogeneity is typical of the broader national context and should be considered when interpreting the generalizability of the findings. Moreover, the predominance of nuclear family households may have shaped participants' perceptions of family and community dynamics assessed in the study. Detailed information about participants given in Table 1.

Measures

Community Resilience Scale. This scale was originally developed by Lindberg and Swearingen (2020) to measure individuals' general perceptions of their community's capacity to recover and adapt in the face of adversity. The unidimensional scale consists of six items (e.g., "When a problem occurs, community members are able to deal with it") rated on a 7-point Likert-type scale ranging from 1 ("strongly disagree") to 7 ("strongly agree"). Higher scores indicate stronger perceived community resilience. The original scale was designed as a unidimensional instrument; therefore, this study examined the cross-cultural validity of the same structure in the Turkish context. Since the theoretical framework of the scale conceptualizes community resilience as a single higher-order construct reflecting perceived trust, cooperation, and collective efficacy, alternative multidimensional models were not tested. The internal consistency coefficient (Cronbach's α) reported in the original study was .83.

Fragility of Happiness Scale. This scale is originally developed by Joshanloo et al. (2015) and adapted by Yıldırım and Çelik Tanrıverdi (2021) to measure belief

Table 1. Demographic Information of Participants.

Variable	Frequency	%	Frequency	%
	Study I (N = 640)		Study II (N = 1,281)	
Gender				
Female	440	68.8	845	66.0
Male	200	31.3	436	34.0
Marital status				
Single	418	65.3	850	66.4
Marriage—Engaged	222	34.7	431	33.6
Parental marital status				
Together	538	83.8	1,112	86.8
Divorced	104	16.2	169	13.2
Disaster experience				
Yes	346	54.1	711	55.5
No	294	45.9	570	44.5
Place where you grew up				
Downtown	427	66.7	874	68.2
County	213	33.3	407	31.8
Structure of your family				
Nuclear family	455	71.1	891	69.6
Extended family	185	28.9	390	30.4

that happiness is temporary and fragile. The unidimensional scale consists of four items (e.g., "Our happiness can turn into unhappiness with a simple event") and is rated on a 7-point Likert-type scale, with 1 being "strongly disagree" and 7 being "strongly agree." High scores indicate high belief that happiness is fragile. Internal consistency coefficient calculated in the adapted version of the scale was found to be .84.

Family Harmony Scale. This scale adapted by Kula et al. (2018). The unidimensional scale consists of five items (e.g., "My family is in a harmony") and is rated on a 5-point Likert-type scale, with 1 being "strongly disagree" and 5 being "strongly agree." High scores indicate high family adaptability. Internal consistency coefficient calculated in the adapted version of the scale was found to be .91.

Group Belonging Scale. This scale developed by Uçar (2010) to measure the level of individuals' feeling of belonging to the group they are in. The unidimensional scale consists of six items (e.g., "In the social groups I am in, I think that we usually have a common purpose that we share") and is rated on a 5-point Likert-type scale, with "1 = totally disagree to 5 = totally agree." High scores indicate a high sense of belonging to social groups. Internal consistency coefficient calculated in the original version of the scale was found to be.85.

10 Items Big-5 Inventory. This scale, which measures extraversion, agreeableness, conscientiousness, emotional stability and openness to experience dimensions of the five factor personality traits with two statements each, consists of ten items in total. Each item contains two adjectives with similar meanings and the scale was adapted into Turkish by Turkum et al. (2016). The scale includes 5-point Likert-type statements (1 = "strongly disagree" to 5 = "strongly agree") such as "I see myself as a timid and quiet person" and "I see myself as an anxious and easily disappointed person." The internal consistency coefficients of the scale were reported as .83 for Openness to Experience, .81 for Agreeableness, .83 for Emotional Instability, .84 for Conscientiousness and .86 for Extraversion.

Data Analysis

CFA was used to evaluate the scale using maximum likelihood estimation in AMOS Graphics. Comparative Fit Index (CFI), Normed Fit Index (NFI), Goodness of Fit Index (GFI), Incremental Fit Index (IFI) and Standardized Root Mean Square Residual (SRMR) were used to evaluate the model fit. Measurement invariance analysis was used according to disaster experience status. Item response theory, item-total correlations of the scale and reliability analysis of other scales were also analyzed.

Results

First, Harman's Single Factor Test was performed to assess the possibility of common method bias (CMB). Within the scope of this test, all observed variables were loaded into a single unrotated factor through exploratory factor analysis (EFA). As a result of the analysis, the first factor explained 15.93% of the total variance, which is below the 50% threshold value widely accepted in the literature (Podsakoff et al., 2003). These findings indicate that CMB did not pose a significant problem in the study since none of the evaluation methods applied revealed a systematic method variance.

Following this, the CMB assumption was confirmed, confirmatory factor analysis was conducted for six-item form. Following the relevant process, confirmatory factor analysis (CFA) revealed acceptable model fit with the Community Resilience Scale; χ^2 (79.594, N = 640) = 8.84, $p < .001$; CFI = .933; GFI = .944; NFI = .928; IFI = .934; SRMR = .0452. Consequently, the six-item structure of the Community Resilience Scale was confirmed. Factor scores, descriptive statistics and item-total correlations are presented in Table 2.

After the structure of Community Resilience Scale was confirmed, criterion-related validity studies were conducted. Pearson correlation analysis used in this stage. The correlation between community resilience, fragility of happiness, group belonging, family harmony and five factor personality traits were analyzed. Following that, community resilience and its relationship with other variables are presented in Table 3. Community resilience was correlated with majority of factors (family harmony: $r = .26$, $p < .001$; group belonging: $r = .27$, $p < .001$; fragility of happiness: $r = -.10$, $p < .001$; agreeableness: $r = .11$, $p < .005$; conscientiousness: $r = .20$, $p < .001$; neuroticism: $r = -.22$, $p < .001$). Descriptive statistics and correlation results for each factors are presented in Table 3.

Table 2. Factor Loading, Descriptive Statistics, and Item-Total Correlations.

Item	Factor Loading	Mean	*SD*	Item-total correlations
Item - 1	.69	3.69	1.86	.64
Item - 2	.65	3.76	1.68	.59
Item - 3	.79	3.83	1.69	.73
Item - 4	.72	4.43	1.84	.64
Item - 5	.73	3.29	1.20	.67
Item - 6	.72	3.62	1.72	.65

Item Response Theory

Item Response Theory (IRT) is an advanced statistical technique for scale development and validation. The fact that IRT focuses on the analysis of individual items by scoring each item separately is seen as a distinguishing feature from summative scoring methods For Likert-type-type scales, it is suggested that the IRT approach is based on the conceptualization of response options in an ordered structure (Cai et al., 2016). Due to the Likert structure of the Community Resilience Scale, it is suggested that IRT analysis will reveal the characteristics of the responses more clearly. Baker (2001, p. 34) stated that α value > 1.00 indicates high discrimination. In the IRT analysis, this value was obtained as $\alpha > 1.00$ for all items. The results of analysis are given in Table 4.

Table 3. Descriptive Statistics and Correlations with Community Resilience Scale.

					Correlation with CCSS 11 Item	
Variables	Mean	*SD*	Skewness	Kurtosis	*r*	*p*
STUDY I						
Community Resilience	22.62	7.70	.103	-.561	-	-
Fragility of Happiness	21.59	5.16	-.604	-.494	-.10**	< 0.001
Group Belonging	23.14	3.50	-.001	-.557	.27**	< 0.001
Family Harmony	19.42	4.52	-.608	-.402	.26**	< 0.001
Big -5 Personality Traits						
Extraversion	7.10	2.00	-.188	-.718	.08	> 0.005
Agreeableness	8.06	1.50	-.470	-.442	.11*	< 0.005
Conscientiousness	7.08	1.79	-.156	-.285	.20**	< 0.001
Neuroticism	6.17	1.98	-.058	-.392	-.22**	< 0.001
Openness	7.51	1.81	-.303	-.653	.05	> 0.005
STUDY II						
Community Resilience	22.88	7.46	.010	-.455	-	-
Family Harmony	19.65	4.61	-.920	.538	.31**	< 0.001
Family Functioning	36.88	7.29	-.428	-.386	.22**	< 0.001
Fragility of Happiness	19.95	5.97	-.555	-.375	-.09*	< 0.005
Fear of Earthquake	23.76	8.02	-.310	-.862	-.11**	< 0.001
Psychological Adjustment	23.76	8.02	-.310	-.862	.10**	< 0.001

*$p < .005$. **$p < .001$.

Table 4. IRT Results for Community Resilience Scale.

Item	*a* coefficient	*SE*	Confidence interval	*z*	$p > \|z\|$
Item 1	1.84	.14	1.56 – 2.12	13.26	.001
Item 2	1.68	.13	1.43 – 1.94	12.89	.001
Item 3	2.62	.20	2.23 – 3.01	13.16	.001
Item 4	2.10	.16	1.79 – 2.42	13.09	.001
Item 5	2.20	.17	1.82 – 2.55	12.62	.001
Item 6	2.10	.15	1.80 – 2.40	13.67	.001

Measurement Invariance

After the factor structure of the Community Resilience Scale was analyzed through confirmatory factor analysis (CFA), whether the scale measures different constructs in a comparable way was analyzed through AMOS program. In this context, the results of CFA applied separately to the data sets separated according to disaster experience status were evaluated. The findings of the analysis are presented in Table 5.

Reliability Analysis

Reliability analyses were performed using Cronbach's alpha, McDonald's omega, and Guttmann's lambda for the six-item form of unidimensional Community Resilience Scale. The results of these analysis are given in Table 6.

Study: Part II

In Study II, descriptive statistics and correlation analysis were conducted. In addition,

Table 5. Fit Indices of Disaster Experience Invariance.

Invariance	χ^2	*df*	GFI	IFI	CFI	RMSEA	SRMR	ΔCFI	ΔRMSEA
Disaster survivor	83.191	9	.92	.91	.91	.16	.053	–	–
No disaster experience	42.842	9	.95	.95	.95	.12	.043	–	–
Configural invariance	126.033	18	.94	.93	.93	.10	.053	–	–
Metric invariance	132.446	23	.93	.93	.93	.09	.055	.002	.01
Scalar invariance	138.529	29	.91	.93	.93	.08	.055	.001	.01

Table 6. Reliability Analysis of Community Resilience Scale.

Analysis	Study I ($N = 640$)	Study II ($N = 1,281$)
Cronbach's alpha	.857	.847
McDonald's omega	.860	.852
Guttmann's lambda	.851	.841

central network analysis was performed with the adapted scale. The serial mediation model was tested with structural equation modeling (SEM).

Method

Participants

Study II included 1,281 participants reached through an online survey. 66.0% of the participants were female and 34.0% were male. 66.4% were single and 33.6% were married or engaged. While 86.8% of their parents were living together, 13.2% were divorced. In terms of disaster experience, 55.5% of the participants stated that they had such an experience, while 44.5% stated that they had not. In terms of the settlement where they grew up, 68.2% grew up in the city center and 31.8% grew up in rural districts. In terms of family structure, 69.6% grew up in nuclear family and 30.4% in extended family. Detailed information given in Table 1.

Procedure

Study II was conducted separately from Study I. Data were collected from another group of participants. Participants were selected through convenience sampling. Within the scope of the research, all volunteers over the age of 18 and everyone who could be reached were included in the research. Informed consent was provided to the participants.

Measures

Fragility of Happiness Scale. This scale is originally developed by Joshanloo et al. (2015) and adapted by Yıldırım and Çelik Tanrıverdi (2021) to measure belief that happiness is temporary and fragile. The unidimensional scale consists of four items (e.g., "Our happiness can turn into unhappiness with a simple event") and is rated on a 7-point Likert-type scale, with 1 being "strongly disagree" and 7 being "strongly agree." High scores indicate high belief that happiness is fragile. Internal consistency coefficient calculated in the adapted version of the scale was found to be .84.

Family Harmony Scale. This scale developed by Kavikondala et al. (2016) and adapted by Kula et al. (2018) to measure harmony levels of families. The unidimensional scale consists of five items (e.g., "My family is in a harmony") and is rated on a 5-point Likert-type scale, with 1 being "strongly disagree" and 5 being "strongly agree." High scores indicate high family adaptability. Internal consistency coefficient calculated in the adapted version of the scale was found to be .91.

General Family Functioning Assessment Device. This scale developed by Miller et al. (1985) and adapted by Körün et al. (2025) to measure functionality of families. The unidimensional scale consists of 12 items (e.g., "We can express our feelings to each other") and is rated on a 4-point Likert-type scale, with 1 being "strongly disagree" and 4 being "strongly agree." High scores indicate high family functioning. . Internal consistency coefficient calculated in the adapted version of the scale was found to be .88.

Earthquake Fear Scale. This scale is originally developed by Satıcı et al. (2024) measure the fear of earthquake. The unidimensional scale consists of seven items (e.g., "Thinking about the earthquake disturbs me") and is rated on a 5-point Likert-type scale, with 1 being "strongly disagree" and 5 being "strongly agree." High scores indicate that individuals have more earthquake fear. The internal consistency reliability coefficient of the original scale was found to be .89.

Psychological Adjustment Scale. This scale developed by Cruz et al. (2020) and adapted by Yıldırım & Solmaz (2021) to measure psychological adjustment. The unidimensional scale consists of eight items (e.g., "To what extent have your emotional problems had a negative impact on your performance at work, school, etc., this week?") and is rated on a 7-point Likert-type scale, with 1 being "strongly disagree" and 7 being "strongly agree." High scores indicate that the individual has many psychological resources and strengths. The internal consistency reliability coefficient of the adapted scale was found to be .80.

Data Analysis

The data were analyzed using IBM SPSS Statistics 27 and AMOS Graphics 24. First, Harman's Single Factor Test was applied to assess potential CMB. Then, a centrality-based network analysis was conducted to examine the relational processes between variables. A Gaussian Graphical Model (GGM) was estimated using the EBICglasso algorithm. The analyses were conducted using JASP software (Version 0.19.1). Item parceling was used to reduce model error rate and improve the ratio of sample size to estimated parameters, thereby increasing the stability of parameter estimates (Little et al., 2002). In this process, items were grouped according to the odd-even numbering method and two parcels were created for each construct. After item parceling, mediation analyses were conducted with SEM. Community resilience was analyzed as an independent variable considering the relationships and theoretical relationships between community resilience, family harmony, family functioning, fragile happiness, fear of earthquake and psychological adjustment. Therefore, the mediating roles of family harmony, family functioning, fragility of happiness and fear of earthquake in the relationship between community resilience and psychological adjustment were investigated. Bootstrap analysis was used to assess the significance of indirect effects. This approach provides a more robust assessment of mediation effects by constructing confidence intervals for the estimated parameters.

Ethical Approval. This research was ethically approved by Yıldız Technical University Institute of Social Sciences Ethics Committee with document number 20250505228, and all participants provided informed consent.

Results

Correlation Analysis

The Community Resilience Scale that adapted in the study was found to have significant relationships with family harmony, family functioning, fragility of happiness, fear of earthquake and psychological adjustment. Community resilience was positively correlated with family harmony ($r = 0.31$, $p < .001$), family functioning ($r = 0.22$, $p < .001$), psychological adjustment ($r = 0.10$, $p < .001$) and negatively correlated with fear of earthquake ($r = -0.11$, $p < .001$) and fragility of happiness ($r = -0.09$, $p < .005$). Correlation results are given in Table 3.

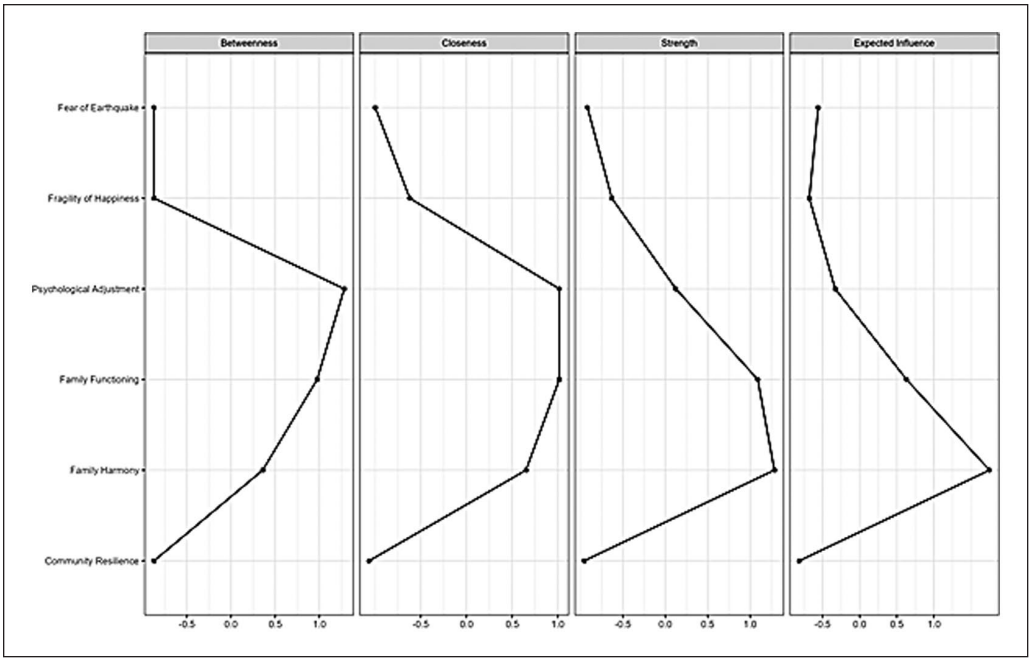

Figure 1. Centrality Network Analysis Plot.

In Study II, First, Harman's Single Factor Test was performed to assess the possibility of CMB. Within the scope of this test, all observed variables were loaded into a single unrotated factor through EFA. As a result of the analysis, the first factor explained 19.40% of the total variance, which is below the 50% threshold value widely accepted in the literature (Podsakoff et al., 2003). These findings indicate that CMB did not pose a significant problem in the study since none of the evaluation methods applied revealed a systematic method variance.

Centrality Network Analysis

The centrality network analysis conducted to elucidate the structural prominence of each variable within the network by utilizing four distinct indices: betweenness, closeness, strength, and expected influence (Bringmann et al., 2019). Results revealed that family functioning consistently exhibited the highest centrality scores across all metrics, underscoring its pivotal and regulatory role within the system. Psychological adjustment emerged as another centrally positioned and influential variable, particularly characterized by elevated closeness and expected influence values. In addition, fragility of happiness demonstrated a high betweenness score, indicating its function as a key intermediary node that bridges other constructs. In contrast, community resilience and fear of earthquake occupied more peripheral positions within the network, with relatively low closeness and strength values, suggesting their indirect and limited influence on the overall system. Detailed information is presented in Figure 1.

Measurement Model

The measurement model consists of six latent variables: community resilience, family harmony, family functioning, fragility of happiness, fear of earthquake, psychological adjustment, and 12 observed variables: two for community resilience, two for family harmony, two for family functioning, two for fragility of happiness, two for fear of earthquake, and two for psychological adjustment. According to results the measurement model

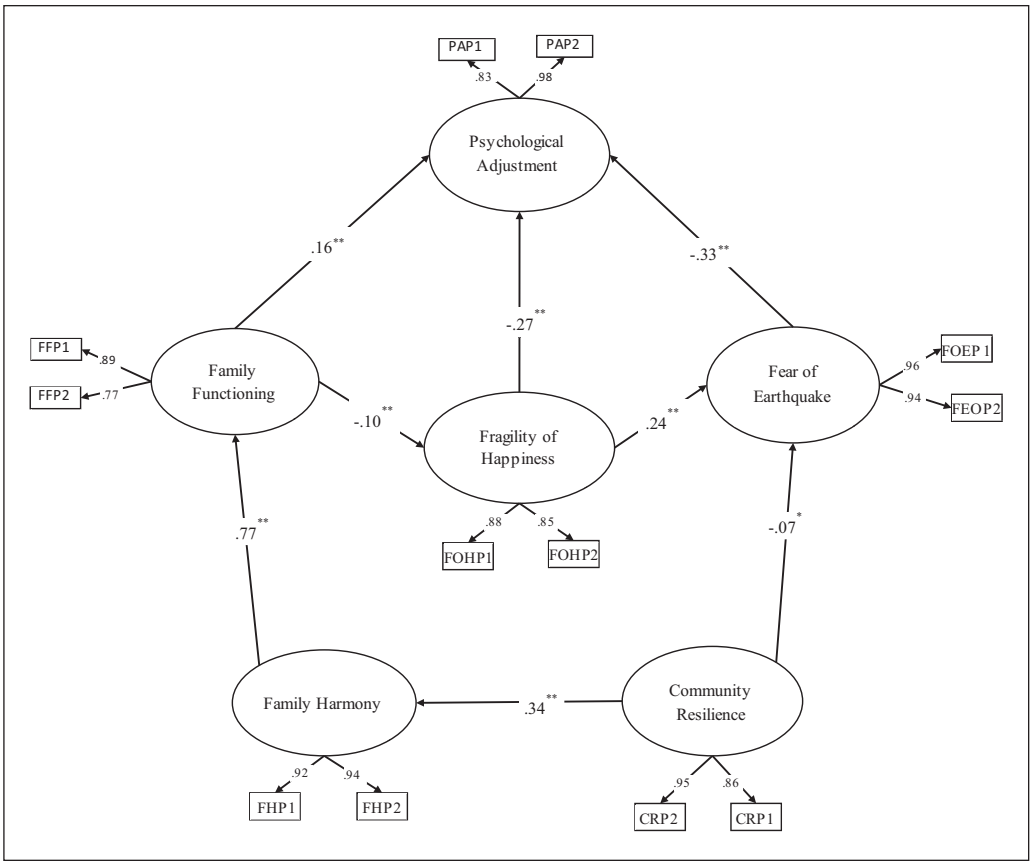

Figure 2. Structural Equation Modeling for the Serial Mediation Model.
Note. CRP: parcel of community resilience, FHP: parcel of family harmony, FFP: parcel of family functioning, FOH: parcel of fragility of happiness, FOE: parcel of fear of earthquake, PAP: parcel of psychological adjustment.
*$p < .05$, **$p < .01$.

fit was satisfactory (χ^2/df = 3.414; CFI = 0.987; GFI = 0.976; NFI = 0.982; TLI = 0.978; IFI = 0.987; SRMR = 0.0340; RMSEA = 0.052). It can be said that the observed variables can represent the latent variables in a meaningful way.

Structural Model

SEM findings showed that the structural model fit was satisfactory (χ^2/df = 3.073; CFI = 0.987; GFI = 0.975; NFI = 0.980; TLI = 0.981; IFI = 0.976; SRMR = 0.0387; RMSEA = 0.048). In conclusion, according to the model, family harmony, family functioning, fragility of happiness, and fear of earthquake mediated the relationship between community resilience and psychological adjustment. All standardized coefficients are presented in Figure 2.

Bootstrapping

The bootstrap technique was applied to the full mediation model, which was theoretically tested in the study and determined as the most appropriate model according to the results of SEM. The results of the bootstrap analysis conducted to provide additional evidence regarding the significance of direct and indirect paths in the model are presented in Table 7. Direct effects were found to be statistically significant. These findings suggest that family harmony, family functioning, fragility of happiness

Table 7. Parameters and 95% C. I. for the Paths of the Final Model.

Model Pathways	Estimated	95 % Confidence Interval	
		Lower	Upper
Direct link			
Community resilience → Family harmony	.344	.278	.413
Family harmony → Family functioning	.769	.718	.811
Family functioning → Fragility of happiness	-.099	-.195	-.009
Fragility of happiness → Fear of earthquake	.236	.157	.311
Community resilience → Fear of earthquake	-.068	-.157	-.013
Family functioning → Psychological adjustment	.161	.097	.225
Fear of earthquake → Psychological adjustment	-.327	-.390	-.258
Fragility of happiness → Psychological adjustment	-.270	-.348	-.185
Indirect link			
Community resilience → Family harmony → Family functioning	.266	.203	.330
Community resilience → Family harmony → Family functioning → Fragility of happiness→ Fear of earthquake	-.008	-.018	-.001
Community resilience → Family harmony → Family functioning → Fragility of happiness→ Fear of earthquake → Psychological adjustment	.002	.000	.005
Community resilience → Family harmony → Family functioning → Fragility of happiness → Psychological adjustment	.008	.002	.017
Community resilience → Family harmony → Family functioning → Psychological adjustment	.049	.028	.075
Family harmony → Family functioning → Fragility of happiness → Psychological adjustment	.028	.003	.058
Family harmony → Family functioning → Fragility of happiness	.170	.100	.247

and fear of earthquake play a mediating role in the relationship between community resilience and psychological adjustment.

Discussion

This study contributes to the literature by providing statistical evidence on the psychometric properties of the Community Resilience Scale in Turkish samples and addresses the gap in cross-cultural validation. It also provides new insights into the processes linking community resilience and psychological adjustment by including a structural model examining the mediating roles of family harmony, family functioning, fragility of happiness, and fear of earthquake. The psychometric analyses in Study I confirmed that the Turkish version of the Community Resilience Scale possesses satisfactory validity and reliability, with the unidimensional structure remaining robust across different demographic groups.

Within Study II, the relationships among community resilience, family harmony, family functioning, fragility of happiness, fear of earthquake, and psychological adjustment were examined through a multilevel mediation model. SEM demonstrate that community resilience was positively associated with family harmony, family functioning, psychological adjustment, and negatively associated with fragility of happiness and fear of earthquakes. These results suggest that psychological adjustment may be understood as an outcome associated with various dynamic interactions between systemic components. In

line with Bronfenbrenner's Ecological Systems Theory, the findings highlight that macrosystem-level resources such as community resilience exert their influence through proximal systems like the family. This supports the need for holistic models that capture indirect environmental corresponds with on individual adjustment (Tesfaye et al., 2021).

According this multiple variable model, community resilience was positively associated with family harmony, family functioning, psychological adjustment, and negatively associated with fragility of happiness and earthquake fear. These findings consistent with previous research grounded in the ecological perspective (Averill et al., 2023; Jackman et al., 2022). Perceptions of an organized, robust and resilient community may associated with greater harmony within family relationships. As aligned with Ecological Systems Theory, stability at the macrosystem level appears to be associated with more supportive microsystem dynamics. Especially during crises and disasters, collective cooperation and resilience can be associated with harmonious family functioning by strengthening emotional sensitivity and collaborative problem-solving (Haylor et al., 2024). Through these pathways, individuals may report a greater sense of emotional security within their families, which is associated with more stable affect regulation and lower perceived impact of external stressors.

As shown in Table 3, the negative association between community resilience and fragility of happiness suggests that individuals who perceive their communities as more resilient may also report lower tendencies to perceive positive emotions as fragile or easily disrupted. Perceiving the community as resilient and crisis-ready may be associated with greater emotional security and reduced sensitivity to environmental uncertainty (Averill et al., 2024). Such perceptions could relate to more stable emotional schemas, which may be linked to decreased psychological distress. Similarly, fear of unpredictable disasters like earthquakes may reflect individuals' concerns about the adequacy of collective preparedness and solidarity. A stronger sense of macrosystem-level safety appears to be associated with lower levels of anxiety responses and enhanced emotional regulation capacities (Berzins et al., 2018). Although these relationships are not causal, they are consistent with ecological systems theory and suggest that community resilience may operate in collaboration with familial and emotional processes in the formation of psychological adjustment outcomes (Baker et al., 2024).

Given the statistical results, the interrelationships among community resilience, family harmony, the fragility of happiness, and fear of earthquakes can be better understood within a framework of systemic regulation and emotional security (Körün & Satıcı, 2025). Higher levels of social resilience strengthen perceived communal cohesion and collective efficacy, which in turn promote relational stability and harmony within families. When families experience higher levels of cohesion and mutual trust, individuals tend to perceive happiness as a more stable and internally anchored experience rather than one dependent on external circumstances (Çitak & Dadandı, 2024). Reducing the fragility of happiness fosters greater psychological security and adaptive capacity by decreasing fear-based cognitive appraisals that arise after environmental threats such as earthquakes (Deniz et al., 2023). Thus, community resilience appears to be linked to emotional regulation across systemic levels and may be associated with lower fear through familial and cognitive pathways (Hong et al., 2021).

These findings can be evaluated not only through the lens of ecological systems theory, but also within the framework of family systems theory. According to Minuchin (2018), the family is a dynamic system of interdependent subsystems that strive for structural stability through flexible boundaries. This system is in constant interaction with broader socioeconomic, cultural and political contexts. In times of communal crisis, higher perceived community resilience may potentially coincide with stronger family system functioning through increased perceptions of external security and support (Dehbozorgi et al., 2023). For example, access to organized

and inclusive community services such as shelter, psychosocial support, or employment initiatives may be associated with a greater sense of internal stability in families (Procentese et al., 2023). In such contexts, families may report more adaptive dynamics, including clear roles, emotional involvement, and emotional responsiveness. Thus, community resilience may be linked to internal regulatory functioning within the family system (Gayatri & Irawaty, 2022).

The negative association between community resilience and the fragility of happiness may reflect more stable perceptions of the persistence and maintainability of positive emotions in resilient social environments. Individuals who perceive higher levels of community resilience may report less vulnerability to external emotional disturbances, possibly due to an enhanced sense of predictability and security in their environment (Zhuo et al., 2022). These perceptions may also be reflected in the process of the family's system, where regular and secure emotional expression is more likely. Similarly, the association between community resilience and reduced fear of earthquakes may indicate that lower perceptions of threat overlap with higher perceived coping capacities at both individual and family levels (Ao et al., 2025). In such settings, families may function in a more flexible and balanced way, which may be associated with higher levels of psychological adjustment. These findings support the view that family functioning is shaped not only by internal processes but also by macrosystem-level structures, especially in collectivist contexts.

As shown in Figure 2, relational patterns obtained from the structural model suggest that various systemic layers may mediate the relationship between social resilience and psychological adjustment. The positive relationship between social resilience and family adjustment implies that perceived resilience at the macrosystem level may correspond to more supportive interactions at the microsystem level (Wu et al., 2024). The significant relationship between family harmony and family functioning is associated with greater role clarity, emotional sensitivity and collaborative problem solving. These family dynamics appear to be related to lower levels of fragile happiness beliefs, indicating a more stable emotional climate. In this context, individuals who report higher emotional stability may also report reduced fear of environmental threats such as earthquakes (Lambert et al., 2022). This pattern of associations highlights the role of the family as a regulatory and mediating system that potentially shapes individuals' coping responses. Psychological adjustment, therefore, may be better understood as an emergent outcome of dynamic intersystemic interactions rather than an individual trait.

The relational patterns identified in the structural model were further supported by the findings from network analysis. As shown in Figure 1, centrality values provide clarity on how the system is organized and through which particular nodes psychological adjustment is positioned. In particular, the psychological adjustment variable showed high centrality values for both betweenness and expected effect, suggesting that psychological adjustment is positioned not only as an individual outcome but as a construct linked to multiple relational pathways within the system (Giannotti et al., 2022). These results are consistent with Bronfenbrenner's Ecological Systems Theory, which emphasizes how individual psychological functioning is shaped by microsystem and macrosystem-level interactions, such as family dynamics and social resilience (Hawkins et al., 2021). Within the centrality network structure, family functioning and the fragility of happiness showed significant strength and closeness values, indicating their significant and close links with other system variables. These central network results highlight the distinctive systemic role of family functioning, consistent with the Family Systems Approach, positioning the family as the primary regulatory hub that filters external resources to facilitate individual adjustment (Bai et al., 2023). The centrality of the fragility of happiness also emphasizes the emotional dimension of

psychological adjustment and reflects individuals' sensitivity to the stability of positive affect. In contrast, the negative expected effect size of fear of earthquakes points to its potential role as a disruptive element in the system (Okur et al., 2024). According to the results, community resilience also demonstrated a relatively low centrality, which is consistent with its role as a broader, external resource within the macrosystem (Carmen et al., 2022). These findings illustrate how network structures can reveal hidden dynamics between psychological constructs that are otherwise difficult to capture with linear models by themselves.

Another remarkable finding in the structural model is the mediating role of the fragility of happiness in the relationship between community resilience and psychological adjustment. This finding suggests that individuals who perceive their communities as more resilient may be less likely to view positive emotions as fragile or easily perishable (McDonald-Harker et al., 2021). From an ecological systems theory perspective, macrosystem-level perceptions such as collective preparedness, institutional coherence, and social solidarity may be linked to microsystem-level emotional regulation processes (Park et al., 2023). Individuals with lower happiness vulnerability scores may experience a more stable emotional climate, which may overlap with better adaptation to stress (McNamara et al., 2021). The negative relationship between happiness vulnerability and psychological adjustment supports this interpretation. In this framework, individuals who report greater emotional stability may also show more balanced responses to external stressors, potentially reflecting the buffering role of emotional resilience (Wong & Yuen, 2023).

Additional findings from the model revealed that there is a significant positive relationship between family functioning and psychological adjustment. In line with the family systems approach, a functional family is characterized by balanced features such as open communication, emotional support, flexible role distribution, and collaborative problem solving (Roberts & Symons, 2024). Previous studies have suggested that these relational patterns may contribute to individuals feeling embedded in a sustainable and supportive system that promotes emotional regulation and coping (Paley & Hajal, 2022). From an ecological perspective, the family as a microsystem is closely related to an individual's emotional and psychological well-being due to its centrality in daily life interactions (Korom et al., 2023). In this framework, family dynamics such as resilience and mutual support can be seen as systemic resources associated with improved psychological adjustment. These findings emphasize that psychological adjustment is not only determined by individual-level strategies, but also shaped by the functionality of the larger family system. Research also shows that constructs such as family harmony and family functioning are related to fundamental regulatory processes such as emotional sensitivity and role clarity (Körün et al., 2025). In conclusion, the relationships found between individual-level variables, such as fragility of happiness and fear of earthquakes, and higher-level systems, such as family and community resilience, emphasize the role of the communal context in shaping emotional processes. Considered together, the results support the conceptualization of psychological adjustment as a holistic outcome emerging from interdependent interactions between ecological and familial systems.

Limitations and Future Research

While this study provides some significant findings, it also has certain limitations. First of all, the cross-sectional design of the study limits making definite inferences about causality. Although mediation analyses were conducted, the relationships observed are statistical rather than causal. Longitudinal designs are needed to confirm the directionality of these effects. In particular, longitudinal or experimental research designs are needed to understand how a multi-layered and dynamic construct such as psychological adjustment is shaped by intersystem

interactions over time. Second, all data are based on self-reports, which may be influenced by cognitive biases such as social desirability or perceptual bias. In addition, the relationship between the variables in the study and different cultural contexts was not analyzed in depth; therefore, the findings obtained may have limited generalizability in different socio-cultural structures. Although the sample adequately represented emerging adults and adults in Türkiye, its homogeneity regarding ethnic background and family structure may limit the generalizability of the findings to more diverse or extended-family settings. Future research could examine whether the psychometric properties and relational pathways of community resilience differ across broader cultural or family contexts. Finally, the exclusion of other important variables such as personality traits, past trauma experiences or social support, which are not included in the model but may affect psychological adjustment, can also be considered as an important methodological limitation.

Implications

Nevertheless, the research findings provide important practical implications for both ecological systems theory and family systems approach. Especially in times of crisis, interventions at the societal level should be planned not only on an individual basis, but also with a holistic approach that includes family and community systems. Considering that resilient and organized community structures can have supportive effects on intra-family functioning and individual psychological balance, it seems important to consider intersystem interaction networks in social policy development processes. In this context, disaster preparedness programs to increase community resilience, social organizations that support community solidarity, or psychoeducation-based interventions that strengthen intra-family functioning can indirectly support individuals' psychological adjustment. At the micro level, social workers can use the Community Resilience Scale to identify families at risk and design psychoeducational programs that strengthen family communication and coping. At the mezzo level, the scale can inform the development of community-based support initiatives, such as neighborhood solidarity networks and family resource centers, which foster collective efficacy and social belonging. At the macro level, the findings highlight the importance of resilience-oriented policy development, where social workers can play an advocacy role in shaping equitable disaster preparedness and recovery programs. While the present study focused on natural disasters such as earthquakes, future research could explore whether similar emotional and social mechanisms operate in natural disasters such as hurricanes, fires, as well as human-made disasters such as violence and terrorism, which may evoke different patterns of community resilience and recovery. By integrating systemic and ecological insights, the study not only advances theoretical understanding but also provides a practical tool and evidence base that can directly guide social work interventions and resilience-oriented policies.

Conclusion

The resilience capacity of communities against crises is an important macrosystem component that can indirectly affect individuals' psychological well-being. In this study, the Turkish version of the Community Resilience Scale was found to be a valid and reliable measurement tool, and the relationships between community resilience, family harmony, family functioning, fragility of happiness, fear of earthquakes and psychological adjustment were examined with a multilevel system approach. The findings confirmed the unidimensional structure of the scale and showed that it can be valid and used in collectivist cultural contexts. Measurement invariance and Item Response Theory analyses revealed that the scale worked consistently across different groups and that the items had high discrimination. The findings of the study suggest that psychological adjustment gains meaning not only in terms of individual characteristics but also in terms of relationships

with family and communal systems. However, the cross-sectional nature of the study poses limitations in terms of directionality and causality of the findings. Therefore, it is recommended that future studies examine the relationships obtained through longitudinal and cross-cultural research designs in more depth. Overall, this study provides a multilevel system interactions-based perspective to understand psychological adjustment and emphasizes that individuals should be supported not only individually but also through familial and social contexts. The findings point to the importance of adopting a systems-based and multi-layered approach in intervention and policy development processes

Declaration of Conflicting Interests

The authors declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Funding

The authors received no financial support for the research, authorship, and/or publication of this article.

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