

The Status of Family Resilience: Effects of Sustainable Livelihoods in Rural China

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Introduction

Family resilience is the capacity of a family to survive under adversity as consequences of family's resources, family's structure, and family's internal connections. In China, families are confronted with rapid social and economic transition that may produce significant changes in their lives. In the 2017 Chinese National Sampling survey, 67.6% of families had only three or fewer members, indicating that China's traditional pattern of large families, with concentrated residence and coordinated resistance against risk, has been changing. Compared to urban families, rural families are more vulnerable in their livelihoods, which entails that they have fewer resources and less capacity to maintain sustainable development under adversity. Family resilience is an index that reflects the family's capacity to react to adversity. A subjective measure, perceived family resilience (PFR), is the tool that reveals existing resource status and shows how the family would react to adversity using available resources from inside and outside.

According to The Department for International Development's (DFID) definition of sustainable livelihood, rural families acquire resources from their natural, physical, social, financial, and human capitals to survive and develop under natural and social adversity. Compared to urban families who have more wealth and more access to public services, rural families in adversity are more vulnerable because of uncertainty in the natural resources that are intrinsic to an agricultural economy. First, Rapid urbanization leads to reduction in the natural capital of farmlands and decrease in agricultural human resources, which reduce the amount of reliable resources and have negative impacts on rural families. Second, physical capital, such as real estate and family facilities, is important to rural families experiencing sudden adversity. rural families experiencing medical problems are more resilient in terms of acquiring additional supportive resources if they have more family facilities. Third, social capital represents rural families' support from their social networks. Families with fewer friends have less chance to access such support. Both financial and human capital reflect the economic capacity for rural families to survive in adversity.

This study designs Chinese version of PFR and classifies PFR into different categories. The proportion of each category in the total sample is estimated. We also explore potential causal connections between sustainable livelihood and PFR to reveal how family capitals in China's social transition influence rural family resilience.

Data and methodology

Our data come from the 2018 Hubei Survey of family development in urbanization. The target samples reside in rural and sub-urban communities at the county level, including H county and J county. The final database included 702 households and 1,032 individuals. Households without agricultural information were deleted leaving 370

households with 550 individuals; 48% were males and 52% were females; ages ranged from 16 to 73 with average 39.8; 94.4% of individuals were married.

Five indexes were used to define sustainable livelihood: natural capital (X_1), physical capital (X_2), social capital (X_3), financial capital (X_4), and human capital (X_5). There are detailed items to measure the specific capital at the family level. The values in each capital are aggregated to form a total score that reflects each capital. A standardization is used to transform the original value of each item to take a value from 0 to 1 according to $X'_{ij} = (X_{ij} - X_{ijmin}) / (X_{ijmax} - X_{ijmin})$. Then X_i ($i=1,2,\dots,5$) indicate the final values of the five capitals, which are calculated as weighted averages of the values X'_{ij} .

Table 1. Measurements of sustainable livelihood (N=370)

Sustainable livelihood (family level)	Mean	SD	Min/Max
Natural capital (X_1)	0.032	0.043	0/0.317
Physical capital (X_2)	0.179	0.080	0.006/0.638
Social capital (X_3)	0.080	0.077	0/0.615
Financial capital (X_4)	0.036	0.062	-0.156/0.328
Human capital (X_5)	0.277	0.121	0/0.750

We use three steps to compute indexes of PFR. In the first, three basic concepts, family belief system, family communication, and family pattern of organization, are used to reflect family resilience according to the original theoretical framework. In the second step, Western scales and Walsh's suggestions are used to design seven indexes of PFR: "maintaining a positive outlook" (MPO) and "making meaning of adversity" (MMA) are indexes that reflect family belief system; "cooperate to reach a family goal" (CRG) and "family inter-connection" (FIC) are indexes that reflect family communication; "family flexibility" (FF), "family utilization of social resources" (FUSR) and "family structure and obligation" (SO) reflect the family pattern of organization. In the third step, 34 items with 5-point Likert scales from the original FRAS, Asian-Pacific version and China version are used to measure the seven indexes. Each of the seven indexes is the mean value of these items.

Table 2. Seven indexes for the three concepts of PFR (N=550 individuals)

Measurement items(strong disagree=1 → strong agree=5)	Mean	SD
Concept 1: Family belief		
Maintaining a Positive outlook (MPO)	3.811	0.599
Making meaning of adversity (MMA)	3.922	0.598
Concept 2: Family communication		
Cooperate to reach a family goal (CRG)	3.868	0.502
Family inter-connection (FIC)	3.779	0.507
Concept 3: Family pattern of organization		
Family flexibility (FF)	3.799	0.558
Family utilization of social resources (FUSR)	3.738	0.617
Structure and obligation (SO)	3.991	0.5

We use latent profile analysis (LPA) to identify categories of PFR. LPA classifies samples into several categories and estimates the probability of each category; besides,

LPA also estimates the score of each index within each group. We use regression mixture modeling (RMM) to assess causal connections between individuals' PFR and covariates. In RMM, the identified category of PFR is the dependent variable. We use multilevel regression mixture modeling (MRMM) in which the identified category of PFR is the dependent variable and both factors of sustainable livelihood at the family level and individual factors are included as covariates (Henry and Muthén, 2010). We use M-plus to apply LPA and MRMM.

Results and discussions

The classification of PFR at the individual level

LPA gives the estimated scores of the seven indexes in each category, and the probability of each category is estimated. Table 3 shows the model with three categories of PFR is the most acceptable. From the estimated scores of the seven indexes in each category, the average scores of the seven PFR indexes are calculated, namely 3.143 in category 1, 3.851 in category 2, and 4.457 in category 3. Since it is hard to see the qualitative features of these, we make one more standardized calculation within each category: the estimated score of each index subtracts the average of the total scores of the seven indexes. Then the final score for each index of PFR gives features of each category of PFR shown in Figure 1.

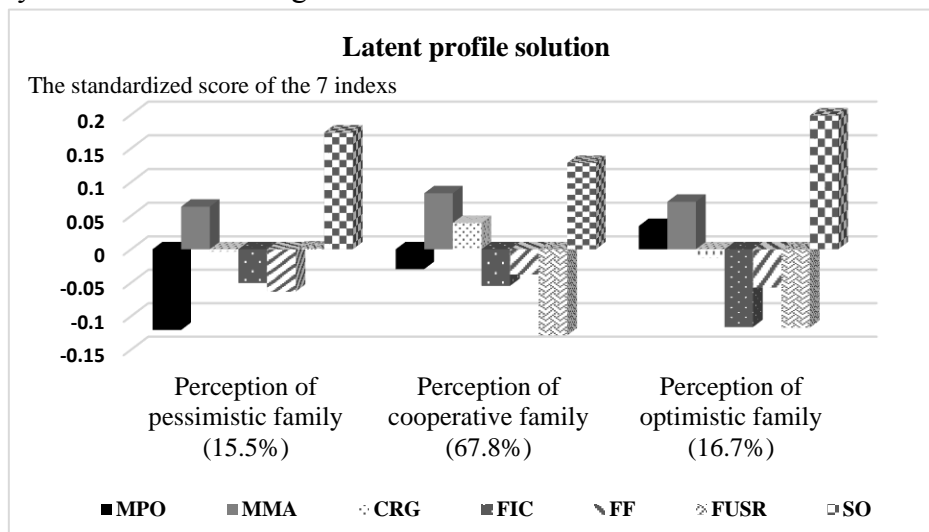


Figure 1. Final classification of perceived family resilience (PFR)

Three categories of PFR have been identified: perception of the optimistic family with the highest score of resilience, perception of the cooperative family with a medium score of resilience, and perception of the pessimistic family with the lowest score of resilience. People from optimistic families have the highest score of optimistic belief, which reflects their stronger psychological adaptability in response to difficulties. However, they have less communication within the family and are not likely to seek outside support. People from cooperative families can acquire family resilience by frequent cooperation within the family. People from pessimistic families have significantly negative attitudes toward adversity, fewer connections within the family, and less family flexibility. These contribute to low resilience, and the family in adversity will react slower and have less resources to mitigate risks. Pessimistic families are the most vulnerable group and are in need of outside support.

Multilevel effects on classification of perceived family resilience

Our final aim is to see whether family sustainable livelihoods have significant impacts on the classification of PFR. Classifications from LPA at the individual level will be dependent categorical variables. Individual factors and family capitals are covariates in the analysis. We use the multilevel regression mixture model (MRMM), and the results are shown in Table 3, where the perception of the cooperative family is the reference category since the number of individual samples within this category is the largest. At the individual level, gender, marriage and age are introduced into the regression as individual covariates.

Table 3. Results of multilevel effects on latent profile solution

Reference: Perception of cooperative family	Model 1			Model 2		
	Perception of pessimistic family			Perception of optimistic family		
	β	S.E.	p	β	S.E.	p
<i>Individual level</i>						
Gender (Ref: male)	0.462	0.001	0.000***	-0.088	0.011	0.000***
Marriage (Ref: unmarried)	0.273	0.007	0.000***	-0.465	0.017	0.000***
Age	-0.024	0.000	0.000***	0.066	0.001	0.000***
<i>Family level</i>						
Natural capital	3.001	0.009	0.000***	3.645	0.127	0.000***
Physical capital	-6.269	0.031	0.000***	-0.287	0.165	0.000***
Social capital	3.598	0.002	0.000***	2.126	0.158	0.000***
Financial capital	-0.640	0.006	0.000***	-1.514	0.012	0.000***
Human capital	-3.612	0.021	0.000***	4.213	0.046	0.000***
<i>Intercept</i>	10.692	0.021	0.000***	-21.816	0.305	0.000***
AIC				2203.30		
BIC				2369.67		
ABIC				2223.81		
Entropy				0.910		

Note: * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

Gender, marital status and age have significant effects on PFR. Rural men have more optimism than rural women in the evaluation of family resilience. Patterns of marriage status differ between rural families with less resilience and those with more resilience. In general, young people are more likely than older people to perceive family cooperation. Family resilience in rural China depends significantly on the status of the family's sustainable livelihood. Rural families with more natural and social capital will be less resilient. These capitals are traditional resources for rural families to have resilience in an agricultural economy. Rural families with more physical and financial capitals will be more resilient. Better physical capital indicates more physical properties, from which rural families can derive extra resources when they deal with challenges. Greater financial capital indicates more family wealth, by which rural families will directly overcome risks and protect wellbeing.