The Mediating Effect of Positive Emotions to Community Resilience and Individual Resilience of Flood Survivors in Tanay, Rizal

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Abstract

The study's objective is to examine the impact of community resilience on individual resilience as mediated by positive emotions as a person experiences major life stressors by determining the levels of positive emotions, community resilience, and individual resilience. The study is anchored on Broaden-and- Build Theory by Barbara Fredrickson, which posits that experience of positive emotions broadens people's momentary thought-action repertoires, which in turn serve to build their enduring personal resources, ranging from physical and intellectual to social and psychological resources. Community Resilience is introduced in the study as a predictor of individual resilience by being mediated by positive emotions. The study utilized a cross-sectional, explanatory non-experimental design. The study used the total population of 99 families and conveniently selected one (1) adult representative as the respondent. Eighteen (87) were qualified as respondents, and twelve (12) were not included in the total enumeration. The study utilized tests of resilience and positive emotions: Dispositional Positive Emotion Scale by Shiota, Keltner, and John, 2006, Interpersonal Support Evaluation List (ISEL) by Brummett, B. H. and Connor-Davidson Resilience Scale 25 (CD-RISC 25) by Davidson, JRT and Connor, KM. Mean, Bivariate Regression, and Multiple Regression are the statistical tools. Results demonstrate complete mediation since a value of 0.263 reveals no statistical significance on the direct effect of community resilience on individual resilience after accounting for the mediating effect of positive emotions. The study implies that the influence of community resilience on individual resilience is uniquely explained by how the participants feel positive emotions in their community. The study recommends that psychologists, educators, and government and non-government organizations collaborate in establishing a resilient community that can promote positive emotions and can broaden the capacity for individual resilience.

Keywords: Community resilience, individual resilience, positive emotions, stressors, flood survivors, Tanay, Rizal, Philippines

1. Introduction

In the Philippines, common life stressors expose Filipinos to their resilience and personal constructs of character strengths. Siege in Zamboanga, the war in Marawi, earthquakes in Bohol, Cebu, and Leyte, devastating super typhoon Yolanda, Pablo, Glenda, Reming, Juan, and Typhoon Ondoy. Some assertion states that Filipinos tend to face adversities with a great deal of positivity effectively. The country's

demographic profile is thriving from third-world countries to developing countries. Researchers are interested in how and where their resilience can emanate.

The community has long been considered a risk factor in Resilience Theory, making life difficult for families and communities [1]. However, the concept of *"Bayanihan"* has been ingrained in Filipino culture for over a century. It refers to a Filipino construct in which people assist one

another in times of need and adversity. This implies that every member of society plays a role in constructing social and individual resilience.

For decades, the wide debate on the concept of resilience has still drawn the attention of researchers that attempt to gain a better understanding of the factors that influence Filipino resilience in having the ability to respond to a variety of adversities. Fredrickson & Branigan [2] posited that positive emotions broaden a person's momentary thought-action repertoire, which helps a person to face adversity and become resilient. The theory proposes dealing with positivity rather than reacting to negativity's psychological dysfunctions and disorders.

A series of events has once again put the Philippines' vulnerability and resilience to the test. In the year 2020, Taal Volcano erupted last January 12, a 6.1 magnitude earthquake in Mindanao Island occurred last March 26, and the global pandemic of Coronavirus Disease (COVID-19) triggered an international health emergency and shook the Philippine health system. While these circumstances affect every individual in the community, it is imperative to investigate factors within a person and the community to address the potential long-term effects of these adversities on mental health, narrowing down the opportunity to experience positive emotions, impeding social support in the community, and affecting the resilience of every individual constituting the society.

As a result, this research focuses on the investigation of community resilience which extends to the social support system that can be a source of positive emotions influencing individual resilience of flood survivors of a typhoon. It is hoped that the findings will help build knowledge and translate that knowledge into useful programs that can be implemented in schools, local governments, and by all community members.

1.1 Objectives

The study's overall goal is to look at how community resilience affects individual resilience as mediated by positive emotions when a person goes through significant life stressors. Specifically, it aims to determine how the flood survivors of Typhoon "Ondoy" in Tanay, Rizal demonstrate individual resilience based on their perception of community resilience in terms of social support such as appraisal, belonging, and tangible support, and how the survivors feel about joy, contentment, pride, love, compassion, amusement, and awe.

The study hypothesizes that the influence of community resilience on individual resilience is mediated by the experiences of positive emotions of flood survivors in Tanay, Rizal. The study further assumes that community resilience can be a source of positive emotions that broadens the capacity for individual resilience.

1.2 Scientific Basis/ Framework

The research is based on Fredrickson's [3] Broaden-and-Build Theory, which claims that positive emotions broaden people's momentary thought-action repertoires. Positive emotions are thought to be uncommon in life-threatening situations, so a psychological process that narrows a person's brief thought-action repertoire to promote quick and decisive action may not be required. On the other hand, positive emotions have a complementary effect compared to neutral states and routine activity. Positive emotional states accumulate personal resources that outlast the transient emotional states that led to them.
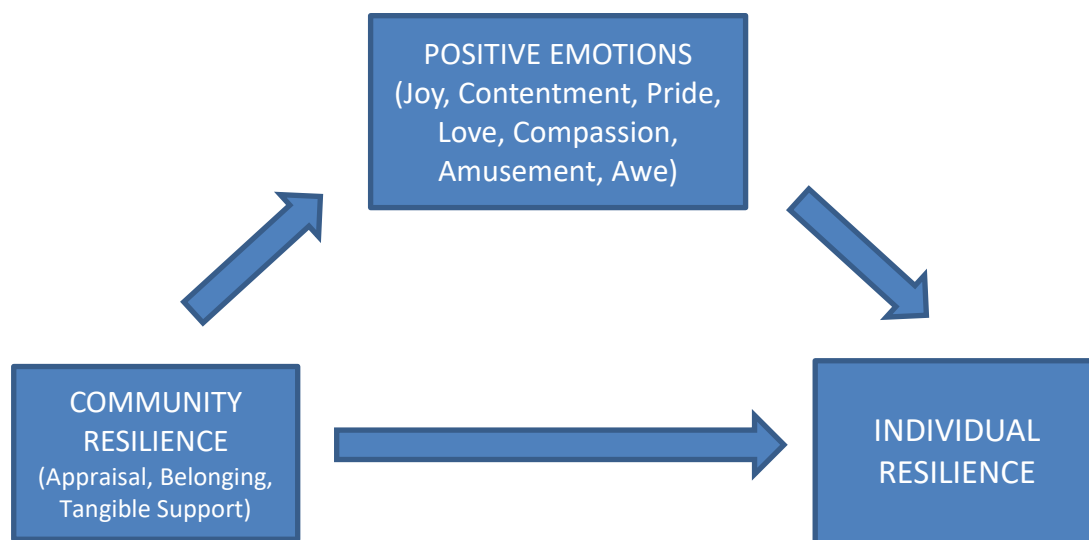
Figure 1
The Conceptual Model Showing the Mediating Effect of Positive Emotions on Community Resilience and Individual Resilience

Van Breda [4] viewed the community as a risk factor that is contributory to some extent of difficulty in life for families and communities. The stressors which people have to withstand and which precipitate crises are often considered as coming from the community, the system above, or around the family of a person. However, as resilience theory has evolved, increasing attention has been given to the community as a source of protective factors. Community resilience, in a form of social support, was explored ranging from emotional, esteem, and network support to community-level support.

Individual resilience is a dynamic process in which the individual displays positive adaptive skills despite experiencing significant traumatic adversity; it is a measure of the ability to cope with stress. Assets and resources within the individual, their life, and environment facilitate this capacity for adaptation and "bouncing back" in the face of adversity [5].

Figure 1 depicts a conceptual model based on Baron and Kenny's [6] mediational hypotheses, which assumed that the process of a mediating variable mediates the effect of an independent variable on a dependent variable. The model includes variables that indicate Community

Resilience as a type of Social Support [7], and social support is defined as three types of interpersonal support systems: Appraisal Support, Belonging Support, and Tangible Support [8]. Joy, contentment, pride, love, compassion, amusement, and awe are the seven most commonly identified positive emotions in studies and research [9].

The mediation model is thought to identify the relationships among the study variables. While extant literature has shown that optimism, and in particular the intervention of positive emotions is a critical ingredient of several positive outcomes as various as psychological adjustment [10], interpersonal relationships [11], flexible behavior [12, 13], life longevity [14], or physical health [15], it is hypothesized that the impact of community resilience on individual resilience is mediated by positive emotions.

2. Methods and Materials
2.1 Research Design
The study used a cross-sectional, explanatory non-experimental design, in which the primary goal is frequently to put a theory about the phenomenon to the test [16]. It's also a type of research study in which data is collected from a

subset of the population or the entire population to answer research questions of interest [17].

2.2 Participants

The participants were gathered from the community of Gawad Kalinga Teleperformance Village located in Tanay, Rizal, Philippines. It has one hundred (100) built shelter homes for ninety-nine (99) families with average family sizes. Using convenience sampling, the study used a total of 99 families, with one (1) adult representative being chosen based on their availability to participate in the study. However, eighty-seven (87) of the total enumeration were qualified as respondents, while twelve (12) were excluded because six (6) were unable to return and answer the questionnaires due to personal reasons.

The community was specifically selected for research based on the reports and requests of the coordinators of the village that there is a continuing need for research-based psychosocial support and intervention programs, after the devastating experience of the survivors displaced by Typhoon Ondoy's flooding on September 26, 2009.

2.3 Instruments

The researchers used standardized resilience and positive emotion scales in their research. Shiota, Keltner, and John [18] developed the Dispositional Positive Emotion Scale. The 12-item questionnaire on the Interpersonal Support Evaluation List (ISEL) by Brummett [19] assesses three aspects of social support that can measure community resilience perceived by the general public: appraisal support, belonging support, and tangible support. The Connor-Davidson [20] Resilience Scale 25 (CD-RISC 25) is a 25-item test that assesses an individual's resilience in various areas and factors.

2.4 Procedure

The study was proposed in response to the Philippine Natural Disasters Risk Reduction and Management platform, focusing on resilience and positive emotions. Coordination and approval to conduct the study were warranted by the researchers. Voluntary participation was solicited from the participants. The questionnaires were distributed house-to-house using a purposeful approach by the researchers. The researchers chose one adult representative from each family based on their availability to answer the questionnaires. Afterward, the information gathered was interpreted, analyzed, and presented.

2.5 Data Analysis

The researchers used appropriate statistical tests to determine the levels of resilience, positive emotions, and the positive emotions' mediating effect on the community and individual resilience. Mean scores are used to determine the level of community resilience, positive emotions, and individual resilience. Researchers used bivariate and multiple regression using Sewall Wright's Path Analysis and Baron and Kenny's [6] Model of Mediation to determine the mediating effect of positive emotions on community and individual resilience. Complete mediation in the variables is assumed after the mediator variable (Positive Emotions) is controlled, the independent variable (Community Resilience) does not affect the dependent variable (Individual Resilience)

3. Results

3.1. Preliminary Analysis

Preliminary analyses were conducted to obtain descriptive statistical results in Table 1. The test of normality of the data reveals that the skewness and kurtosis coefficients of each variable ranged from +1 to -1, which obtained a significance value greater than $p>.05$ in both Kolmogorov-Smirnov and Shapiro-Wilk [21] tests of normality. This implies that the data is not statistically different from the normal distribution, thus, the data is normally distributed. Internal reliability of the instruments was also verified obtaining a range of $\alpha=.670$ to $\alpha=.833$ showing an acceptable to a good degree of internal consistency of the instruments utilized.

Table 1. Descriptive Statistics of Study Variables

Variables	No. of Items	Mean	SD	a	Skewness	Kurtosis
Individual Resilience Questionnaire						
1. Individual Resilience	25	2.69	.59	.792	-0.002	-0.347
Positive Emotions Questionnaire						
2. Joy	6	4.49	1.20	.739	0.004	-0.336
3. Contentment	5	4.93	1.22	.761	0.155	-0.104
4. Pride	5	4.74	1.24	.711	0.006	-0.335
5. Love	6	4.80	1.18	.708	0.020	-0.341
6. Compassion	5	5.42	1.04	.670	0.051	-0.437
7. Amusement	5	4.81	1.40	.833	0.024	-0.385
8. Awe	6	4.63	1.19	.773	-0.001	-0.352
Community Resilience Questionnaire						
9. Belongingness	4	2.77	.50	.712	0.017	-0.309
10. Appraisal	4	3.08	.55	.722	0.160	-0.298
11. Tangible	4	2.54	.49	.709	0.139	-0.077

Table 2. Correlation Matrix of Study Variables

Variables	1	2	3	4	5	6	7	8	9	10	11
Individual Resilience											
1. Individual Resilience	-										
Positive Emotions											
2. Joy	.356**	-									
3. Contentment	.383**	.549**	-								
4. Pride	.195	.488**	.553**	-							
5. Love	.476**	.608**	.612**	.450**	-						
6. Compassion	.281**	.280**	.267*	.191	.401**	-					
7. Amusement	.250*	.459**	.469**	.440**	.626**	.421**	-				
8. Awe	.387**	.442**	.630**	.404**	.451**	.392**	.482**	-			
Community Resilience											
9. Belonging	.091	.086	.221*	.037	.226*	.014	.092	.015	-		
10. Appraisal	.327**	.288**	.333**	.231*	.357**	.200	.208	.134	.221*	-	
11. Tangible	.194	.337**	.190	.316**	.344**	.037	.107	-.053	.274*	.298**	-

** $p < 0.01$ level (2-tailed).

* $p < 0.05$ level (2-tailed).

Individual resilience scores revealed an average resilience of the participants (*M=2.69, SD=0.59*). Mean scores of positive emotions in terms of joy (*M=4.49, SD=1.20*), contentment (*M=4.93, SD=1.22*), pride (*M=4.74, SD=1.24*), love (*M=4.80, SD=1.18*), compassion (*M=5.42, SD=1.04*), amusement (*M=4.81, SD=1.40*) and, awe (*M=4.63, SD=1.19*) revealed above-average feelings of positive emotions. Community resilience in terms of belongingness (*M=2.77, SD=.50*), appraisal (*M=3.08, SD=.55*), and tangible support (*M=2.54, SD=.49*) revealed a high level of community resilience. Significant correlations among community resilience, positive emotions, and individual resilience were revealed in Table 2. Results show that individual resilience is generally associated with positive emotions, while community resilience in terms of appraisal support is relatively related to positive emotions and individual resilience.

3.2. Main Analysis

Table 3 shows the impact of community resilience and positive emotions on individual resilience. In the bivariate regression analysis, the estimates for Path C show the total effect of the independent variable on the dependent variable without accounting for the effect of the mediator. The R^2 value of *0.077* revealed that the community resilience explains a *7.7%* variance to individual resilience with $F(1,85)=7.04$. This means that individual resilience is positively predicted by community resilience with *B= 0.444, p=0.010,* which is found statistically significant. In Path A, $R^2 = 0.111$ explained the *11.1%* variance on community resilience to positive emotions with $F(1,85)=10.477$. The findings revealed that community resilience positively predicts positive emotions with *B= 0.783, p=0.002,* and is also found statistically significant. In multiple regression analysis, paths B and C' with $R^2=0.188$ revealed that community resilience and positive emotions explain 18.8% variance to individual resilience with $F(2, 84)=9.49$. This implies that positive emotions with *B=0.231, p=.001* are found to have a statistically significant direct effect on individual resilience (path B). However, community resilience with *B=0.263, p = 0.113* did not reveal a statistically significant direct effect on individual resilience (path C'). This implies that community resilience is not revealed as a significant predictor of individual resilience after accounting for the effect of positive emotions as mediating variables. This further implies that a complete mediation there exists. Calculating the significance of the mediating model, an interactive calculation tool for the Sobel test [22] was utilized. The values of test statistics *Z=2.327, SE=0.078, p=0.019* confirm a significant complete mediation analysis. Thus, positive emotions mediate fully the influence of community resilience on individual resilience. Multicollinearity of the variables was tested based on the maximum level of the "5" collinearity criterion [23]. Statistics show that the tolerance and variance inflation factors ranging from *0.902* to *1.109* respectively in the path estimates are within the acceptable range that is less than the criterion. This implies that there are no multicollinearity issues in the variables analyzed for mediation in the study.

Table 3. Regression Analysis for Mediation of Positive Emotions between Community Resilience and Individual Resilience

Testing Path	Unstan-dardized B	Standard Error (B)	95% Confidence Interval (Lower, Upper)	Standard-ized Coef-ficient B	R-Square Change	Collinearity Statistics	
						Tolerance	VIF
Path C: DV = Individual Resilience IV = Community Resilience $R^2 = 0.077, F(1, 85)=7.04, p=0.010$	0.444*	.168	(.112, .779)	.278	7.70%	1.000	1.000

Path A: DV = Positive Emotions IV = Community Resilience $R^2 = 0.111$, $F(1, 85) = 10.477$, $p = 0.002$	0.783*	.242	(.302, 1.26)	.333	11.1%	1.000	1.000
Path B and C': DV = Individual Resilience IVs = Positive Emotions; Community Resilience $R^2 = 0.188$, $F(2, 84) = 9.49$, $p = 0.001$; 0.113	0.231* 0.263	.069 .164	(.094, .369) (-.063, .589)	.351 .168	18.8%	.902 .902	1.109 1.109
Sobel Test:	**Test Statistic**	**Std. Error**	**p-value**				
	2.3265549	0.0777429	0.01998897				
Regression PROCESS V4 by Hayes	**Effect**	**Boot Std. Error**	**Boot LLCI**	**Boot ULCI**			
Indirect Effect (a x b)	0.181*	.0934	.0303	.3886			
Direct Effect (c')	0.263*	.1640	-.0634	.5889			
Total Effect (c)	0.444*	.1650	.1063	.7626			

To verify the regression analysis, using ProcessV4 by Hayes [24], the indirect effect = *0.181 (LLCI=.0303, ULCI=.3886),* direct effect = *0.263 (LLCI=.1640, ULCI=.0634),* and the total effect= *0.44 (LLCI=.1650, ULCI=.1063)* were calculated having the same values in the path analysis.

Figure 2 shows the path estimates on the complete analysis of the mediating effect of positive emotions on community resilience and individual resilience.
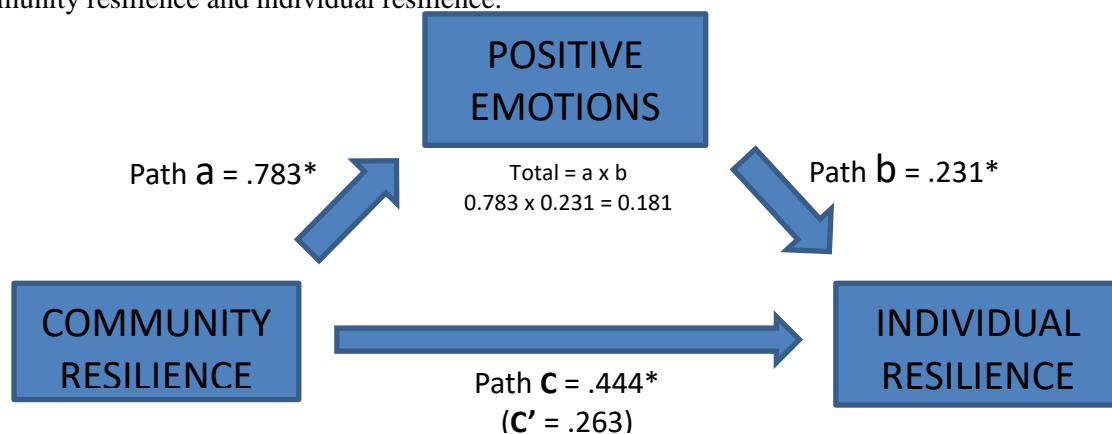

Figure 2**:**Path Estimates on the Mediating Effect of Positive Emotions to
Community Resilience and Individual Resilience

4. Discussions

In today's challenging conditions, negative life events such as war, violence, economic problems, political instability, poverty, health problems, and natural disasters require individuals to be equipped with protective factors that broaden the capacity to become resilient. The concept of resilience has evolved in the past decades. Theoretical writings indicate that psychological resilience is a relatively stable personality trait characterized by the ability to overcome, steer through, and bounce back from adversity [25, 26]. Emerging adult literature suggests that individual differences in psychological resilience may account for the adaptive ways in which life stressors are encountered, managed, and transformed [27]. Individual resilience encompasses the ability of humans to adapt to negativities, and having the skills of coping with the negativities [28]. With the extant literature studying individual resilience, other factors were investigated that are contributory to an individual's capacity to adapt, manage and bounce back from adversity.

In this study, the community investigated comprised of families who are survivors of the flooding of typhoon "Ondoy". The objectives are to determine the levels of individual resilience, community resilience, and how survivors utilized positive emotions during the process of bouncing back from the negative experiences. Community resilience, in a form of social support, was introduced and was examined as an environmental factor from where the individual resilience of flood survivors can emanate. Although there is a notion that the individuals in the community may have the same experiences but differences in coping and adaptation to bounce back from the adversity, the community was considered in the study as either a risk or a protective factor that affects individual resilience. Moreover, the study further investigated the role of positive emotions that theoretically, broaden and build an individual's capacity to become more resilient. The study generally hypothesized that positive emotions can mediate the effects of community resilience on individual resilience.

Results of the study revealed the importance of experiencing positive emotions such as compassion, amusement, love, contentment, pride, awe, and joy which predicted the capacity of flood survivors to become resilient. This finding was supported by recent research that suggests that positive emotions are a crucial component of trait resilience [13, 29]. The experience of positive emotion is thought to have adaptive benefits in the coping process [30]. Recurrent experiences of positive emotion will likely increase the possibility that an individual will find positive meaning and make positive appraisals in subsequent stressful events, providing both short-term and long-term benefits to an individual [13]. Empirical support for this prediction comes from research demonstrating that resilient individuals tend to draw on positive emotion-eliciting coping strategies such as benefit finding and positive reappraisal [31, 32], humor, and infusing ordinary events with positive meaning [33, 34], and goal-directed problem-focused coping [35, 36] to regulate negative emotional experiences.

While emphasizing the experience of positive emotions predicting individual resilience, the results of the study also highlighted the importance of community resilience. Mustaffa, et. al. [37] stressed that the psychological effects of natural disasters impact an individual's way of thinking and feeling. However, human beings are very social creatures in which individuals in a community need to be around others for fun, safety, healing, and growth. Traumatic events like disasters can have negative effects on survivors' lives as well, at the very time when being isolated and alone can be most damaging. Social connection and engagement help survivors to feel and know that they are not alone, help them feel safe, and normalize their lives to some extent [37]. Congruent to the previously cited literature, findings revealed that belongingness, appraisal, and tangible support from the community as a form of social support, although do not significantly have a direct impact on individual resilience, can promote the feeling of and allow a person to experience positive emotions. This further suggests that the characteristic of a community rather than being viewed as a risk factor can be a source of positive

emotions as protective factors to become resilient.

Taken as a whole, the findings highlighted that positive emotions predict individual resilience, while community resilience can be a source of positive emotions, and individual resilience is influenced by community resilience as a function of positive emotions.

One significant finding of the study draws into the advancing views on community resilience. As resilience theory has evolved, increasing attention has been given to the community as a source of protective factors. Van Breda [4] emphasized that support systems are located outside the immediate family boundaries – extended family, religious communities, the local community, the work community, etc. Social support, although often equated with community resilience, it is largely conceived as the role that individuals or resources within a community play in the life of an individual, and are thus individual resilience factors are located within the community context. Nevertheless, it could be argued that a community could be considered resilient when the majority of members of a community have a strong sense of being connected with other members and resources in the community [4]. Abramson et al. [38] further suggested that individual resilience interventions need to be linked to broader community resilience activities and partnerships that may serve to activate and sustain adaptive behaviors. Thus, beyond individual interventions, community resilience interventions can engage members in collaborative planning [39].

Major limitations of the study were taken into account. Primarily, the findings are limited to the perception of flood survivors in the relocated community in Tanay, Rizal, Philippines. A larger population must be considered to validate the results. Secondly, the data were gathered at a single point in time using the cross-sectional descriptive method of analysis. Qualitative data may be gathered to obtain an in-depth analysis of the lived experiences to understand deeper the resilience and positive emotions of flood survivors.

This study further provides direction for future research focused on the continuing development of community resilience from an individual level resilience to community-level resilience. This development tended to look at factors within a community that promotes individual resilience and conceptualize the community as a system or unit in itself and describes how a community may or may not evidence resilience in the face of community challenges. In the case of the Philippines which is susceptible to climate-related disasters, the importance of studying and understanding the resilience of displaced disaster survivors from an ecological perspective must be a priority. Studies among displaced survivors highlight the importance of enhancing employment skills and livelihood opportunities. While family interventions, family therapy, and parenting skills may be important means to strengthen the resilience, especially of young survivors [40]. Moreover, because developing countries are disproportionately affected by climate-related disasters, there has been an increasing call for integrated climate change adaptation and climate-related disaster risk reduction and management strategies [41].

4. Summary and Conclusions

In this study, it was revealed that positive emotions are a complete mediator of community and individual resilience. Significant correlations were discovered among the prediction of variables implying that community resilience can predict positive emotions, and positive emotions can predict individual resilience. However, the study also found that while community resilience did not have a significant direct effect on individual resilience, the community, rather than being viewed as a risk factor, can be considered a source of positive emotions as forms of psychological resources and protective factors that can potentially cultivate individual resilience.

5. Implications and Recommendations

The study suggests that cultivating positive emotions is important because it helps people become more resilient. Community resilience, which is another source of positive emotions, is

linked to individual resilience. According to the study, educators and school psychologists in the school setting may integrate a specific student development program into the curriculum cultivating positive emotions and individual resilience as a preventive measure that will provide protective factors for students facing life adversities. Social workers in Local Government Units may also intensify welfares services.

The government and non-government organizations may provide various types of social support to extend community resilience and individual resilience to a community-level resilience (e.g., physical infrastructure, social health, livelihood, policy implementation in disaster risk reduction and management, etc.).

National Disaster Risk Reduction and Management may include mental health as a component of DRRM programs for assessment and management, taking resilience and positive emotions into account.

6. Output of the study (subject for proposal making)

The Psycho-Social Intervention Program in Building Positive Emotions, Community Resilience, and Individual Resilience - a research-based extension program that provides seminar workshops and training to Local Government Units Disaster Risk Reduction Management personnel, social workers, and front-liners who will extend help to natural disaster survivors or emergency crisis.

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8. Acknowledgments