

## Supplementary Material (I): The Questionnaire

Hello. Thank you for answering our questionnaire. It is associated with work that is funded by a grant from the Ministry of Science and Technology's to examine "Interactions and Moderating and Causal Relationships among Place Attachment, Flood Risk Perceptions and Preventive Coping Behavior: A Case Study of Taipei" (program number: MOST107-2410-H-170-001-MY2). The questionnaire is designed primarily to examine the effects of perceptions of climate change and flood risk on coping behavior, and will be used for research purposes only. Your personal data will not be disclosed so you can complete it with peace of mind.

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### 1. Flooding Risk Perception

Please indicate your degree of agreement with the following statements

Items	Degree of agreement
1. Flood risk will continue to increase due to climate change.	<input type="checkbox"/> Strongly disagree <input type="checkbox"/> Disagree <input type="checkbox"/> Neither agree nor disagree <input type="checkbox"/> Agree <input type="checkbox"/> Strongly agree
2. Due to storms and their direct effects (rainfall, short-term heavy rainfall and landslides), compound floods are the most serious type of disaster in Taipei.	<input type="checkbox"/> Strongly disagree <input type="checkbox"/> Disagree <input type="checkbox"/> Neither agree nor disagree <input type="checkbox"/> Agree <input type="checkbox"/> Strongly agree
3. Although rapid urban development has increased the area of impermeable water, I do not think the incidence of flooding will increase.	<input type="checkbox"/> Strongly disagree <input type="checkbox"/> Disagree <input type="checkbox"/> Neither agree nor disagree <input type="checkbox"/> Agree <input type="checkbox"/> Strongly agree
4. I think floods have inherently unpredictable characteristics that make their impacts mostly underestimated.	<input type="checkbox"/> Strongly disagree <input type="checkbox"/> Disagree <input type="checkbox"/> Neither agree nor disagree <input type="checkbox"/> Agree <input type="checkbox"/> Strongly agree

### 2. Attitudes toward Flooding Risk

Please indicate your degree of agreement with the following statements.

Items	Degree of agreement
1. When I think of floods, I feel anxious.	<input type="checkbox"/> Strongly disagree <input type="checkbox"/> Disagree <input type="checkbox"/> Neither agree nor disagree <input type="checkbox"/> Agree <input type="checkbox"/> Strongly agree
2. I may be hurt by a flooding disaster.	<input type="checkbox"/> Strongly disagree <input type="checkbox"/> Disagree <input type="checkbox"/> Neither agree nor disagree <input type="checkbox"/> Agree <input type="checkbox"/> Strongly agree

3. When a flood occurs, I can keep myself safe.	<input type="checkbox"/> Strongly disagree <input type="checkbox"/> Disagree <input type="checkbox"/> Neither agree nor disagree <input type="checkbox"/> Agree <input type="checkbox"/> Strongly agree
4. I feel powerless in the face of floods; I am not sure that I can protect my life against floods.	<input type="checkbox"/> Strongly disagree <input type="checkbox"/> Disagree <input type="checkbox"/> Neither agree nor disagree <input type="checkbox"/> Agree <input type="checkbox"/> Strongly agree
5. I feel powerless in the face of flooding. I am not sure that I can protect my property and residence against it.	<input type="checkbox"/> Strongly disagree <input type="checkbox"/> Disagree <input type="checkbox"/> Neither agree nor disagree <input type="checkbox"/> Agree <input type="checkbox"/> Strongly agree
6. I think that the government does not sufficiently support and develop measures to prevent flooding.	<input type="checkbox"/> Strongly disagree <input type="checkbox"/> Disagree <input type="checkbox"/> Neither agree nor disagree <input type="checkbox"/> Agree <input type="checkbox"/> Strongly agree
7. The jurisdiction in which I live fully informs me of the flooding risk in my area.	<input type="checkbox"/> Strongly disagree <input type="checkbox"/> Disagree <input type="checkbox"/> Neither agree nor disagree <input type="checkbox"/> Agree <input type="checkbox"/> Strongly agree
8. I feel exposed to the risk of flooding.	<input type="checkbox"/> Strongly disagree <input type="checkbox"/> Disagree <input type="checkbox"/> Neither agree nor disagree <input type="checkbox"/> Agree <input type="checkbox"/> Strongly agree

### 3. Experiences of Flooding

Please indicate your degree of agreement with the following statements.

Items	Degree of agreement
1. I know that flooding has occurred and dangerous places in the community where I live.	<input type="checkbox"/> Strongly disagree <input type="checkbox"/> Disagree <input type="checkbox"/> Neither agree nor disagree <input type="checkbox"/> Agree <input type="checkbox"/> Strongly agree
2. I don't know what I should do following a flood where I live.	<input type="checkbox"/> Strongly disagree <input type="checkbox"/> Disagree <input type="checkbox"/> Neither agree nor disagree <input type="checkbox"/> Agree <input type="checkbox"/> Strongly agree
3. I have experienced flooding and floods have endangered my life.	<input type="checkbox"/> Strongly disagree <input type="checkbox"/> Disagree <input type="checkbox"/> Neither agree nor disagree <input type="checkbox"/> Agree <input type="checkbox"/> Strongly agree
4. The flooding risk in the community where I live is well known.	<input type="checkbox"/> Strongly disagree <input type="checkbox"/> Disagree <input type="checkbox"/> Neither agree nor disagree <input type="checkbox"/> Agree <input type="checkbox"/> Strongly agree
5. The flooding risk in the community where I live is very high.	<input type="checkbox"/> Strongly disagree <input type="checkbox"/> Disagree <input type="checkbox"/> Neither agree nor disagree <input type="checkbox"/> Agree <input type="checkbox"/> Strongly agree

### 4. Optimistic Bias

Please indicate your degree of agreement with the following statements.

Items	Degree of agreement
1. I can accurately estimate the probability of flooding in Taipei.	<input type="checkbox"/> Strongly disagree <input type="checkbox"/> Disagree <input type="checkbox"/> Neither agree nor disagree <input type="checkbox"/> Agree <input type="checkbox"/> Strongly agree
2. Taipei is exposed to heavy rainfall.	<input type="checkbox"/> Strongly disagree <input type="checkbox"/> Disagree <input type="checkbox"/> Neither agree nor disagree <input type="checkbox"/> Agree <input type="checkbox"/> Strongly agree

3. The probability of flooding in Taipei is high.	<input type="checkbox"/> Strongly disagree <input type="checkbox"/> Disagree <input type="checkbox"/> Neither agree nor disagree <input type="checkbox"/> Agree <input type="checkbox"/> Strongly agree
4. Risk of flooding will not affect my living situation.	<input type="checkbox"/> Strongly disagree <input type="checkbox"/> Disagree <input type="checkbox"/> Neither agree nor disagree <input type="checkbox"/> Agree <input type="checkbox"/> Strongly agree
5. I have confidence even in the event of a flood, and believe that I can get through it safely.	<input type="checkbox"/> Strongly disagree <input type="checkbox"/> Disagree <input type="checkbox"/> Neither agree nor disagree <input type="checkbox"/> Agree <input type="checkbox"/> Strongly agree
6. Flooding will only affect a few people in the area where I live.	<input type="checkbox"/> Strongly disagree <input type="checkbox"/> Disagree <input type="checkbox"/> Neither agree nor disagree <input type="checkbox"/> Agree <input type="checkbox"/> Strongly agree
7. I believe that the place where I live is less susceptible to flooding than the places where other Taipei residents live.	<input type="checkbox"/> Strongly disagree <input type="checkbox"/> Disagree <input type="checkbox"/> Neither agree nor disagree <input type="checkbox"/> Agree <input type="checkbox"/> Strongly agree
8. Flooding has changed my perception of urban disaster prevention and rescue.	<input type="checkbox"/> Strongly disagree <input type="checkbox"/> Disagree <input type="checkbox"/> Neither agree nor disagree <input type="checkbox"/> Agree <input type="checkbox"/> Strongly agree
9. Media reports often exaggerate risk of flooding.	<input type="checkbox"/> Strongly disagree <input type="checkbox"/> Disagree <input type="checkbox"/> Neither agree nor disagree <input type="checkbox"/> Agree <input type="checkbox"/> Strongly agree

#### 5. Place Attachment

Please indicate your degree of agreement with the following statements.

Topic	Degree of agreement
1. The current living environment makes me feel safe.	<input type="checkbox"/> Strongly disagree <input type="checkbox"/> Disagree <input type="checkbox"/> Neither agree nor disagree <input type="checkbox"/> Agree <input type="checkbox"/> Strongly agree
2. I feel like I am not part of Taipei City.	<input type="checkbox"/> Strongly disagree <input type="checkbox"/> Disagree <input type="checkbox"/> Neither agree nor disagree <input type="checkbox"/> Agree <input type="checkbox"/> Strongly agree
3. I don't think I belong in my district.	<input type="checkbox"/> Strongly disagree <input type="checkbox"/> Disagree <input type="checkbox"/> Neither agree nor disagree <input type="checkbox"/> Agree <input type="checkbox"/> Strongly agree
4. I don't think I belong in my neighborhood.	<input type="checkbox"/> Strongly disagree <input type="checkbox"/> Disagree <input type="checkbox"/> Neither agree nor disagree <input type="checkbox"/> Agree <input type="checkbox"/> Strongly agree
5. I will take the initiative to care for the Taipei City environment.	<input type="checkbox"/> Strongly disagree <input type="checkbox"/> Disagree <input type="checkbox"/> Neither agree nor disagree <input type="checkbox"/> Agree <input type="checkbox"/> Strongly agree
6. I will take the initiative to care for the environment in my district.	<input type="checkbox"/> Strongly disagree <input type="checkbox"/> Disagree <input type="checkbox"/> Neither agree nor disagree <input type="checkbox"/> Agree <input type="checkbox"/> Strongly agree
7. I will take the initiative to care for the environment in my neighborhood.	<input type="checkbox"/> Strongly disagree <input type="checkbox"/> Disagree <input type="checkbox"/> Neither agree nor disagree <input type="checkbox"/> Agree <input type="checkbox"/> Strongly agree
8. It is difficult for me to leave Taipei City.	<input type="checkbox"/> Strongly disagree <input type="checkbox"/> Disagree <input type="checkbox"/> Neither agree nor disagree <input type="checkbox"/> Agree <input type="checkbox"/> Strongly agree

9. It would be very difficult for me to leave my district.	<input type="checkbox"/> Strongly disagree <input type="checkbox"/> Disagree <input type="checkbox"/> Neither agree nor disagree <input type="checkbox"/> Agree <input type="checkbox"/> Strongly agree
10. It would be very difficult for me to leave my neighborhood.	<input type="checkbox"/> Strongly disagree <input type="checkbox"/> Disagree <input type="checkbox"/> Neither agree nor disagree <input type="checkbox"/> Agree <input type="checkbox"/> Strongly agree
11. Taipei City is an ideal place.	<input type="checkbox"/> Strongly disagree <input type="checkbox"/> Disagree <input type="checkbox"/> Neither agree nor disagree <input type="checkbox"/> Agree <input type="checkbox"/> Strongly agree
12. My district is an ideal place for me to live.	<input type="checkbox"/> Strongly disagree <input type="checkbox"/> Disagree <input type="checkbox"/> Neither agree nor disagree <input type="checkbox"/> Agree <input type="checkbox"/> Strongly agree
13. My neighborhood is an ideal place for me to live.	<input type="checkbox"/> Strongly disagree <input type="checkbox"/> Disagree <input type="checkbox"/> Neither agree nor disagree <input type="checkbox"/> Agree <input type="checkbox"/> Strongly agree
14. Taipei, where I live, is a part of me, and I am familiar with the city.	<input type="checkbox"/> Strongly disagree <input type="checkbox"/> Disagree <input type="checkbox"/> Neither agree nor disagree <input type="checkbox"/> Agree <input type="checkbox"/> Strongly agree
15. The district where I live is part of me, and I am familiar with it.	<input type="checkbox"/> Strongly disagree <input type="checkbox"/> Disagree <input type="checkbox"/> Neither agree nor disagree <input type="checkbox"/> Agree <input type="checkbox"/> Strongly agree
16. The neighborhood where I live is part of me, and I am familiar with it.	<input type="checkbox"/> Strongly disagree <input type="checkbox"/> Disagree <input type="checkbox"/> Neither agree nor disagree <input type="checkbox"/> Agree <input type="checkbox"/> Strongly agree

#### 6. Coping Behavior - Adaptation Behavior

Please indicate your degree of agreement with the following statements.

Items	Degree of Agreement
1. Participating in disaster prevention and rescue work (such as disaster prevention drills) in my area of residence is very valuable.	<input type="checkbox"/> Strongly disagree <input type="checkbox"/> Disagree <input type="checkbox"/> Neither agree nor disagree <input type="checkbox"/> Agree <input type="checkbox"/> Strongly agree
2. Taiwan will face an increasing flood risk in the future.	<input type="checkbox"/> Strongly disagree <input type="checkbox"/> Disagree <input type="checkbox"/> Neither agree nor disagree <input type="checkbox"/> Agree <input type="checkbox"/> Strongly agree
3. I am interested in information about flood risk and flooding.	<input type="checkbox"/> Strongly disagree <input type="checkbox"/> Disagree <input type="checkbox"/> Neither agree nor disagree <input type="checkbox"/> Agree <input type="checkbox"/> Strongly agree
4. I think storing supplies in case of flooding is pointless.	<input type="checkbox"/> Strongly disagree <input type="checkbox"/> Disagree <input type="checkbox"/> Neither agree nor disagree <input type="checkbox"/> Agree <input type="checkbox"/> Strongly agree

#### 7. Coping Behavior - Mitigation Behavior

Please indicate the frequency with which you will perform the following tasks.

Topic	Degree of Agreement
1. I will participate in disaster prevention and rescue work (such as disaster prevention drills).	<input type="checkbox"/> Never <input type="checkbox"/> Rarely <input type="checkbox"/> Sometimes <input type="checkbox"/> Often <input type="checkbox"/> Always

2. I will try to learn more about flood risk.	<input type="checkbox"/> Never <input type="checkbox"/> Rarely <input type="checkbox"/> Sometimes <input type="checkbox"/> Often <input type="checkbox"/> Always
3. I will store supplies and rescue kits at home.	<input type="checkbox"/> Never <input type="checkbox"/> Rarely <input type="checkbox"/> Sometimes <input type="checkbox"/> Often <input type="checkbox"/> Always
4. I will work to understand the content of the government's disaster prevention plan, and become familiar with disaster prevention and relief preparations.	<input type="checkbox"/> Never <input type="checkbox"/> Rarely <input type="checkbox"/> Sometimes <input type="checkbox"/> Often <input type="checkbox"/> Always
5. When shopping or ordering food, I will consider my actual needs to avoid waste.	<input type="checkbox"/> Never <input type="checkbox"/> Rarely <input type="checkbox"/> Sometimes <input type="checkbox"/> Often <input type="checkbox"/> Always
6. In order to reduce air pollution and carbon dioxide emissions, I will take more public transportation.	<input type="checkbox"/> Never <input type="checkbox"/> Rarely <input type="checkbox"/> Sometimes <input type="checkbox"/> Often <input type="checkbox"/> Always
7. When I leave the room for more than three minutes, I will turn off the lights to reduce waste.	<input type="checkbox"/> Never <input type="checkbox"/> Rarely <input type="checkbox"/> Sometimes <input type="checkbox"/> Often <input type="checkbox"/> Always
8. When I buy home appliances, I will choose those with energy-saving labels.	<input type="checkbox"/> Never <input type="checkbox"/> Rarely <input type="checkbox"/> Sometimes <input type="checkbox"/> Often <input type="checkbox"/> Always

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**Basic data**

- 1.Name: \_\_\_\_\_ 2. Phone: \_\_\_\_\_
- 3.E-mail: \_\_\_\_\_ 4. Address: \_\_\_\_\_
- 5.Sex: Male Female 6. Occupation: Agricultural Workers Business  
Services Other\_\_\_\_\_
- 7.Age: Less than 20 years old 21-30 years old 31-40 years old 41-50 years old  
More than 51 years old
- 8.Place of residence: \_\_\_\_\_
- 9.Education: Illiterate Primary and secondary schools High School Tertiary institutions Graduate school
- 10.Personal annual income (personal GDP measurement): If not a major source of the economy at home, the average disposable income (i.e. total income/population) is calculated according to the Accounting Office, by the number of households
- Less than NTD\$250,000 NTD\$250,000-349,999 NTD\$350,000-499,999  
NTD\$500,000-700,000 More than NTD\$700,000
- 11.Number of your households: 1 2 3 4 5 6 \_\_persons

**Supplementary Material (II): Factor Analyses for the Eight Questions Regarding Coping Behavior**

There are eight questions regarding coping behavior. Factor analyses were performed to simplify the data and statistical analyses were then performed. According to Table II-1, the KMO Measure of Sampling Adequacy is 0.659, which exceeds 0.50 and so indicates that a factor analysis of the data is effective. Moreover, the significance level indicates the usefulness of a factor analysis with the data herein.

**Table II-1.** KMO and Bartlett's Test.

Kaiser-Meyer-Olkin Measure of Sampling Adequacy		0.659
Bartlett's Test of Sphericity	Approx. Chi-Square	1762.221
	df	120
	Sig.	0.000

Extraction method: Principal Component Analysis

Based on the rotated component matrix in Table II-2, the factors that are considered in coping behavior-related questions 1, 2, 6 can be collapsed into a single factor, "high-effort coping behavior", and those considered in coping behavior-related questions 3, 4, 5, 7, 8, can be collapsed into a single factor, "low-effort coping behavior".

**Table II-2.** The Rotated Composition Matrix.

Question				
	1	2	3	4
1	0.133	0.708	-0.161	0.156
6	0.136	0.875	-0.142	0.127
2	0.160	0.730	-0.205	0.187
3	-0.112	-0.240	0.881	-0.124
4	-0.242	-0.127	0.752	0.113
7	-0.130	-0.289	0.756	-0.103
8	-0.135	0.147	-0.052	0.872
5	-0.125	0.184	0.008	0.679

**Supplementary Material (III): Factor Analyses for the Sixteen Questions Regarding Place Attachment**

There are 16 questions regarding place attachment. Factor analyses were carried out to simplify the data thus obtained and then statistical analyses were performed. As seen in Table III-1, the KMO Measure of Sampling Adequacy was 0.732, exceeding 0.500, so a factor analysis of the data in this work is useful. The statistical significance also indicates the effectiveness of factor analysis.

**Table III-1.** KMO and Bartlett's Test.

Kaiser-Meyer-Olkin Measure of Sampling Adequacy		0.732
Bartlett's Test of Sphericity	Approx. Chi-Square	1768.277
	df	116
	Sig.	0.000

Extraction method: Principal Component Analysis

**Table III-2. Total Variance Explained.**

Component	Initial Eigenvalues			Extraction Sums of Squared loadings			Rotation Sums of Squared Loadings		
	Total	% of variance	Cumulative %	Total	% of variance	Cumulative %	Total	% of variance	Cumulative %
1	6.332	39.072	39.072	6.332	39.072	39.072	3.523	22.111	22.061
2	2.155	13.221	52.293	2.155	13.221	52.293	2.981	18.080	40.070
3	1.891	11.956	64.249	1.891	11.956	64.249	2.666	16.270	56.360
4	1.229	8.306	72.555	1.229	8.306	72.555	2.481	16.185	72.555
5	0.879	6.224	78.779						
6	0.702	4.636	83.415						
7	0.633	4.209	87.625						
8	0.452	3.324	90.949						
9	0.398	2.409	93.358						
10	0.278	1.792	95.150						
11	0.235	1.442	96.593						
12	0.178	1.052	97.644						
13	0.154	0.889	98.533						
14	0.102	0.623	99.157						
15	0.088	0.525	99.682						
16	0.045	0.318	100.000						

Of the rotated component matrix in Table III-3, the first component includes questions 1, 11, 12, 13, 14, 15, and 16; the second component includes questions 5, 6, and 7; the third component includes questions 2, 3, and 4 and the fourth component includes questions 8, 9, and 10.

Table III-3. Rotated Component Matrix.

Question	Component			
	1	2	3	4
14	0.878	0.091	-0.096	0.064
15	0.750	0.344	-0.222	0.063
16	0.697	0.256	-0.187	0.022
1	0.675	-0.189	-0.055	-0.078
12	0.648	0.123	-0.210	0.351
13	0.588	0.245	-0.178	0.335
11	0.515	0.105	-0.111	0.408
6	0.153	0.987	-0.171	0.161
5	0.151	0.845	-0.145	0.127
7	0.154	0.878	-0.205	0.177
3	-0.211	-0.245	0.988	-0.105
2	-0.258	-0.065	0.878	0.041
4	-0.127	-0.289	0.854	-0.123
9	0.084	0.204	-0.041	0.948
10	-0.022	0.180	0.008	0.855
8	0.238	0.014	-0.095	0.707