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Article

Resident Perception and Willingness to Pay for the Restoration and Revitalization of Urban Rivers

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Abstract: River revitalization, also called river restoration, has been implemented globally to restore urban river ecosystems that would benefit both the environment and local residents in various ways. The Hong Kong government has been attempting to revitalize local urban rivers; however, the perception and value of river restoration have not been assessed. With the application of a contingent valuation method, a questionnaire survey was designed to capture the attitude, place attachment, and willingness to pay (WTP) of Hong Kong residents in the context of urban rivers and river revitalization, and a proposed scenario for revitalization is given. The relationships among WTP, attitude and place attachment were explored through regression analysis. A total of 400 questionnaire samples were collected from Hong Kong residents, and over 75% of respondents were willing to pay for the proposed scenario. The results from regression analysis indicated that attitude, place dependence, place identity, and place social bonding positively influenced WTP and WTP bid amounts. In contrast, the place effect was unexpectedly found to be negatively correlated with WTP. Implications were drawn from these results, and recommendations were made concerning the features to be restored and conserved in future river revitalization work and the need to provide quality urban nature-based spaces for citizens.



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Keywords: river restoration; river revitalization; willingness to pay; attitude; place attachment

1. Introduction

Like most governments around the world, the Hong Kong government has implemented river management and modification work, primarily for urbanization and flood control, since the 1960s [1]. The modification measures mainly include channelizing, straightening, widening, deepening and diverting natural river courses [1]. While such measures have been successful in flood prevention, they are implemented at the expense of the environmental, ecological, social, and cultural functions of rivers. As a result, there has been a growing call for the natural restoration of urban rivers globally to re-establish healthy ecosystems that provide ecosystem services for societies [2–4]. The practice and concept of urban river restoration, also called revitalization or rehabilitation (usually termed revitalization in Hong Kong), can be traced back to the early 20th century where rivers were restored mainly for recreational purposes to improve fishing experiences by altering the channel forms and morphology to create favourable habitats for fish [5]. At the same period, river restoration had started in the US as well, to restore damaged rivers through dam removals, replacement of culverts and restoration of floodplains [6]. Later in the 1980s in western Europe, river restoration became the key water management strategy used to rebuild natural ecosystems and improve environmental conditions [7]. Recently, emphasis has been placed on the human aspect of restoration by acknowledging the role of citizens as stakeholders, the importance of ecosystem services and the socioeconomic drivers of restoration [8,9]. Since 2007, the Drainage Services Department of Hong Kong has taken initiatives in an attempt to introduce the concept of revitalization into drainage management and completed a few projects focused on revitalizing some sections of local

urban rivers [10]. The revitalization works involved the reintroduction of natural elements into channelized rivers, including the replacement of bedding materials, redesign and reconstruction of the river channel to physically and ecologically resemble the natural river course and the introduction of native vegetation [10]. However, the revitalization projects completed so far were predominantly trials and small in scale, with a focus on particular districts or sections of a drainage system. In 2015, the Drainage Service Department proposed a strategy to restore a large-scale drainage and develop drainage networks in newly developed areas based on innovative ideas and technologies; these recommendations remain mostly in the planning and policy formulation stage [10].

To implement effective and socially optimal policies and perform decision making, policymakers should first understand how people value and perceive ecosystem restoration projects [11,12]. Such an understanding could assist policymakers in enacting the most appropriate management strategies and practices and gaining public support [11–14]. Adopting an economic valuation method has been a common academic approach to gauge the value of nonmarket environmental goods, such as the value of rivers to citizens. The contingent valuation method (CVM) has been one of the most widely employed economic techniques in nonmarket goods valuation [15], which makes it a good tool for informing policymakers of the value of river restoration to citizens. CVM typically allows people to indicate their valuation of environmental goods in monetary terms through questionnaire surveys, and monetary values are conventionally expressed in willingness to pay (WTP) or willingness to accept (WTA) [16].

In addition to identifying the value of ecosystem restoration to the public, understanding people's attitudes or other sociopsychological attributes that drive their WTP is also pivotal. By understanding these attributes, the expectations and perceptions of people can be integrated into the design and implementation of policies and restoration programmes [17]. The existing literature on river restoration has extensively explored variables including the perception of ecosystem services [18–20], the perceived quality and conditions of rivers [6,21,22], and knowledge about rivers and restoration [22]. In contrast, studies featuring traditional sociopsychological attributes are relatively scarce [23–25]. People's attitudes are among the most powerful and well-studied sociopsychological variables in assessing the intentions and behaviour of people in environmental studies, as well as studies of WTP [26–28]. Likewise, place attachment is another popular determinant of WTP, as it reflects the connections of people to the environment through various dimensions [17].

The current study first investigates the attitude of Hong Kong citizens towards river restoration and their place attachment to major urban rivers. A proposed restoration scenario is presented, and willingness to pay is assessed. The relationships among attitude, place attachment, and WTP are then explored. Implications are drawn from the resulting relationships, and relevant suggestions for future river restoration policies and programmes in Hong Kong are given.

2. Literature Review

2.1. Non-Market Environmental Goods Valuation

A variety of methods have been adopted by scholars to estimate the value of non-market environmental goods. The CVM and choice experiments (CEs) are two common stated preference valuation techniques [29]. The two methods both conventionally utilize questionnaire surveys as the study instrument. A CE requires the survey respondents to be familiar with the environmental good and effective evaluations of different choice sets, while the CVM does not have this limitation [25]. Many citizens in Hong Kong are not familiar with river restoration, a new concept in the region, or the current situation; notably, the projects completed or in progress are mainly small in scale with limited promotion. Due to the ease of implementation and such advantages, the current study employs the CVM as the valuation tool.

A CVM survey usually begins by presenting a proposed scenario for the environmental good in concern. Individuals are then asked about their preference for the environmental

good in monetary terms. WTP, which is the maximum monetary amount an individual would be willing to pay for the improved scenario, or WTA, which is the minimum monetary amount an individual is willing to accept to relinquish the good, are typical measurements used in this type of valuation [30]. The CVM has been broadly adopted in environmental studies and valuations, e.g., sustainable energy use [31,32] and biodiversity conservation [33,34]. Additionally, some examples of CVM applications specifically for river restoration and conservation have been explored. For instance, Chen and Aertsens [15] employed the CVM as a valuation tool to investigate the WTP of Belgian citizens regarding the restoration of riparian meadows; they found that in the recurrent payment scheme, half of the respondents reported a bid amount over EUR 30, and in the single-payment scheme, 50% of the respondents were willing to pay EUR 50. Similarly, through a CVM, Nielsen-Pincus, Sussman [25] studied the WTP of citizens for safeguarding ecosystem services in the Mackenzie River watershed (Oregon, USA). The authors reported that the majority of respondents were willing to pay at least USD 0.50 per month, over 40% were willing to pay USD 1 a month and only approximately 25% were willing to pay USD 3 per month.

2.2. Attitude toward Ecosystem Restoration and Place Attachment

A number of intention-behaviour models have included attitude as one of the components and attributes; for instance, the theory of reasoned action [35] and theory of planned behaviour [36] include attitude as a strong predictor of behavioural intention and behaviour. Attitude has not been as commonly considered in studies of economic contingent valuation [37]. Nevertheless, it was suggested that by considering WTP as a behavioural intention and attitude as a predictor of it, the explanatory power of models or analyses in contingent valuation studies could be improved [37]. Some scholars have attempted to incorporate attitudes into their CVM studies of river restoration. The study of Halkos and Matsiori [38] ascertained that attitude in terms of option, direct use value, and indirect use value had positive influences on the bid amount of people in a water conservation project implemented along the Pinios River in Greece. In a CVM study conducted on the Elbe River in Germany, the author developed an attitude-behaviour model and demonstrated that the environmental attitude of people was significantly and indirectly correlated with WTP [39].

Place attachment as a construct has increasingly been employed in environmental studies, as it has provided a new perspective to reflect the value of nature to people [40]. Place attachment may capture the value of nature and landscapes that reflect the connection between people with nature, which is not conventionally encompassed in variables such as ecosystem services that are prevalently studied in river restoration [17,40]. Place attachment (PA) may generally be referred to as the “bonds that humans share with specific settings” [41], despite the debates among scholars in defining the term [42]. Place attachment has been studied in multiple dimensions in various studies. A number of studies considered PA as a two-dimensional construct consisting only of place identity and place dependence [43–45]. However, additional dimensions, such as place effect and place social bonding, have been incorporated into PA in some studies [46–48]. The current study takes this approach to consider all four dimensions of PA in an attempt to holistically capture the association between PA and WTP. Place dependency reflects the functional attachment of an individual to a place with regard to the resources provided by the place and the desired activities that the individual would like to perform at the particular place [49]. Place identity allows individuals to express and affirm their identity [50]. Place effect denotes the emotional link between individuals and a place [51]. Place social bonding refers to the socially based place bonds individuals form from experiences derived from social interactions with others such as family, friends, or community at a particular place [48,52]. Only a few studies have included place attachment in investigations of river restoration. For instance, Alam [17] studied the residents of Dhaka City in Bangladesh and indicated that place attachment in terms of experience was associated with their willingness to

contribute money to river restoration programs. Sarvilinna et al. [53] demonstrated that place attachment could be a leading factor in influencing high-level WTP through residents' willingness to participate in volunteer work in the area of Koillismaa, Finland.

3. Methods

3.1. Questionnaire Survey and Design

Data for this study were collected through a questionnaire survey of residents in Hong Kong. The questionnaire was designed to consist of three main parts concerning the attitude, place attachment, WTP, and demographic information of respondents. The first part of the questionnaire gauged the attitude of respondents toward river restoration and their level of place attachment associated with urban rivers in Hong Kong. Questions related to attitude can help reflect the level of support of respondents toward river restoration. The survey consisted of questions A1–A5 on attitude and P1–P13 on place attachment. All questions in this part of the survey were answered based on a Likert scale of 1 to 5, where 1 refers to “Strongly disagree” and 5 refers to “Strongly agree” with the statement. The questions on attitude and place attachment were designed with reference to those used in similar studies of river restoration focusing on two constructs [17,38,39,53]. Four sub-constructs of place attachment, including place dependence (items P1–P3), place identity (items P4–P7), place effect (items P8–P10), and place social bonding (items P11–P13), were all measured and considered in this study. Modifications were made to match the local context of Hong Kong. In the second part of the survey, respondents were first briefed about the past and current river management measures and policies in Hong Kong and the present river revitalization works being performed by the government. Then, the following proposed river restoration scenario was presented to respondents with images of Cheonggyecheon (a successful example of urban river restoration in Seoul, Korea).

“Taking foreign examples such as Cheonggyecheon in Korea as a reference, the Hong Kong government will revitalize rivers in Hong Kong in multiple aspects, including

- (1) Reconstruction and redesign of river courses to resemble natural river forms*
- (2) Improvements in water quality and waste management*
- (3) Reintroduction of vegetation and wildlife*
- (4) Improvements in amenities and aesthetic features*

Revitalization is expected to improve the functions of rivers in all aspects, e.g., environmental, recreational, ecological aspects.”

Then, respondents were asked to compare the anticipated outcomes of the programme to their current perceived conditions of urban rivers. Respondents were asked if they were willing to pay for to support the proposed programme in the following 5 years, and they were asked to consider their financial status before making a decision. If respondents agreed to pay, they were then requested to choose one of eight payment cards with bid amounts ranging from “less than 50 HKD” to “more than 500 HKD” (pegged exchange rate of HKD:USD = 7.8:1), which would represent their WTP. The bid amounts were decided with reference to other WTP studies performed in Hong Kong as an estimate of the general WTP of citizens for environmental goods [54–56]. Alternatively, if respondents refused to pay, a follow-up question asked why. The final part of the questionnaire collected basic demographic information about the respondents, including their age, education level, and income.

3.2. Survey Sites and Procedures

To ensure that all invited participants had experience visiting and utilizing urban rivers, the questionnaire survey was delivered along 6 urban rivers in Hong Kong across Kowloon and the New Territories. The surveyed rivers included the Kai Tak River in Wong Tai Sin district, the Shing Mun River in Sha Tin district, the Tai Po and Lam Tsuen Rivers in Tai Po district, the Kam Tin River in Yuen Long district, and the Tuen Mun River in Tuen

Mun district. The survey sites covered all major channelized rivers in urban areas with a high level of use by citizens. Surveys were conducted in the middle to lower courses of the rivers, where the sections are highly modified and close to residential areas that are commonly frequented. A similar number of samples was collected from each site.

The questionnaire survey was issued between September 2020 and December 2020. Participants aged 18 or above were the targets of this study. Student assistants from a local university were recruited to help conduct the questionnaire. The student assistants were briefed and trained to deliver the surveys with supervision by the principal researcher. Questionnaire surveys were conducted in a face-to-face format. Convenient sampling was adopted, and 1 in 5 visitors along the riverside was invited to join the survey. Participation in the survey was completely voluntary, and no reward or compensation was given to participants. A total of 520 individuals were approached, of whom 400 agreed to participate and completed the survey. A response rate of 76.9% was obtained.

3.3. Data Analysis

The distribution of WTP and reasons for not being willing to pay are first presented. Statistical analysis was performed in two stages. The first stage was a logistic regression analysis that distinguished the relationships among predictors for respondents who were willing and not willing to pay. Positive bid voters and negative bid voters (respondents who were willing and not willing to pay, respectively) were coded 1 and 0, respectively, for the logit model. The second stage of statistical analysis was performed based on ordinal regression to explore the relationships among attitude, place attachment, and levels of WTP. A reliability test was conducted to confirm the reliability of the attitude and place attachment variables in terms of Cronbach's alpha value. To facilitate ordinal regression, bid amounts reported by respondents in the WTP questions were transformed and coded to 8 levels of WTP. Codes 1 to 8 represent WTP levels of "less than 50 HKD" to "more than 500 HKD" in ascending order.

4. Results

4.1. Demographic Information of Respondents

Female respondents (56.8%) slightly outnumbered male respondents in this study (43.3%) (Table 1). The distribution of age groups was fairly equal, with most groups at approximately 20%, except the respondents aged 41–50, which constituted only 14.5% of all participants. In terms of education, the majority of respondents achieved a high level of education, as over 60% of them earned an undergraduate degree or higher degree. Very few respondents (4%) were educated at the primary level or below. Respondents were generally either in the lowest income group with less than HKD 10,000 a month to HKD 19,999 (36.6%) or the highest income group earning HKD 60,000 or above each month (23%). It should be noted that approximately a quarter of participants either had no income, were students, or had retired.

Table 1. Demographic characteristics of respondents.

Gender	n	%	Age Groups	n	%
Male	173	43.2	18–30	76	19.0
Female	227	56.8	31–40	88	22.0
			41–50	58	14.5
			51–60	78	19.5
			61 or above	100	25
Household Income (in HKD) *			Education Level		
Under 10,000	51	12.8	Primary or lower	16	4.0
10,000–19,999	95	23.7	Secondary	139	34.8
20,000–29,999	44	11.0	Undergraduate	226	56.5
30,000–39,999	17	4.3	Postgraduate	19	4.7
40,000–49,999	14	3.5			
50,000–59,999	14	3.5			
60,000 or above	92	23.0			
No income/Retired/Student	73	18.2			
			Total (N)	400	100

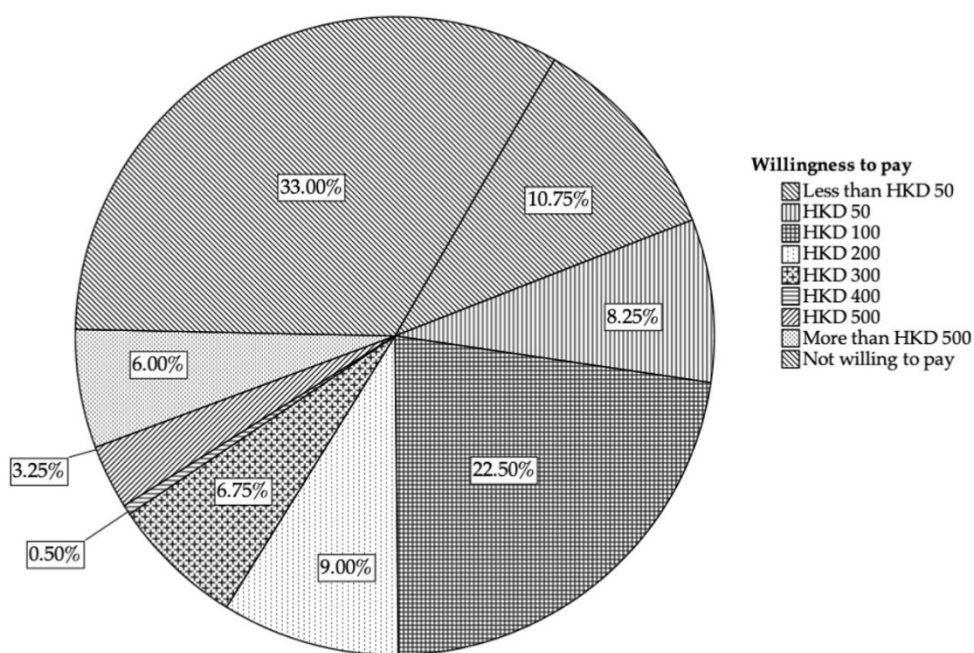
* Officially pegged exchange rate: USD 1.00 = HKD 7.80.

4.2. Willingness to Pay and Reasons for Not Paying

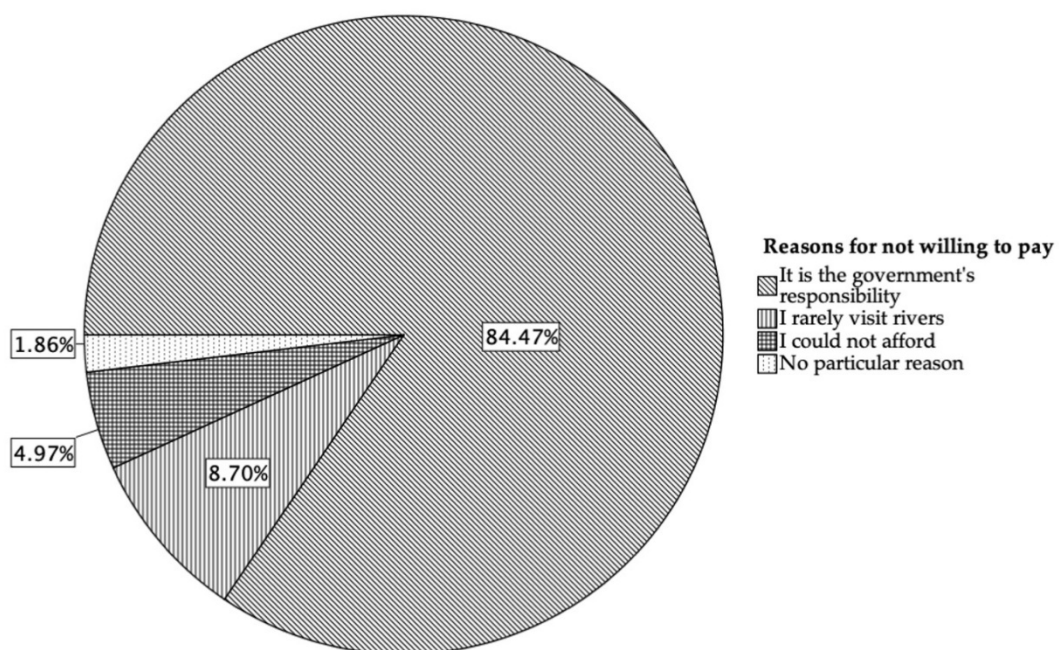
A third of the respondents were not willing to pay for the proposed river restoration scenario, and the other two-thirds of respondents were willing to pay (Figure 1a). For respondents who were willing to pay, approximately 30% were willing to pay HKD 50 or less. Another one-third of respondents would pay HKD 100 for the restoration. Respondents who were willing to pay HKD 200 or 300 accounted for only approximately 13% and 10% of participants, respectively. Amounts above HKD 300 were rarely chosen by respondents. In general, respondents were mostly willing to pay for a relatively small amount. The reasons for respondents to not be willing to pay were determined (Figure 1b). Approximately 5% of respondents expressed that they either could not afford to pay or had no particular reasons for making such a choice. The rest were considered protest responses because they perceived value in river restoration but were not willing to pay regardless of such value. Eighty-five percent of respondents who were not willing to pay thought it was the government's responsibility to fund such projects, and approximately 8% mentioned that they rarely visited and used urban rivers.

4.3. Attitude toward River Restoration and Place Attachment of Respondents

Concerning the attitude of respondents to river revitalization, the mean score of the questionnaire items ranged from 3.4 to 3.9 (Table 2), which is generally quite high. Respondents agreed the most with the statement mentioning that rivers should be revitalized because they are valuable natural resources (mean score = 3.9); similarly, they strongly believed that revitalizing rivers would improve society and the environment (mean score = 3.88). The Cronbach's alpha score for this construct was 0.669.



(a)



(b)

Figure 1. Distribution of amount of willingness to pay (a) and reasons of respondents for not willing to pay (negative votes) (b).

Table 2. Summary of attitude and place attachment of respondents on urban rivers and river revitalization.

Items	%					Mean	Standard Deviation	Cronbach's α
	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree			
Attitude						3.704		0.669
A1. Rivers should be revitalized as they are valuable natural resources	19.0	59.0	15.8	5.3	1.0	3.90	0.799	
A2. Rivers should be revitalized because of their recreational functions	12.8	55.5	25.3	5.8	0.8	3.74	0.781	
A3. Revitalizing rivers only benefit a small group of people (R)	9.3	41.5	31.5	15.5	2.3	3.40	0.934	
A4. Revitalizing rivers is a waste of money (R)	13.0	47.3	28.0	10.0	1.8	3.60	0.899	
A5. Revitalizing rivers would bring improvements to the society and environment	19.8	53.3	22.3	4.3	0.5	3.88	0.788	0.751
Place attachment						2.75		
<i>Place dependence</i>						3.08		
P1. Rivers provide me the space to do what I like to	2.8	33.3	51.2	11.8	1.0	3.25	0.734	
P2. I would not substitute rivers for any other type of nature environment	2.0	27	37.8	30.3	3.0	2.95	0.878	
P3. I enjoy the environment of rivers than other areas	2.3	29.8	41.0	24.0	3.0	3.04	0.865	0.879
<i>Place identity</i>						2.62		
P4. I feel home when visiting rivers	2.3	9.3	44.0	40.3	4.3	2.65	0.796	
P5. I feel connected to the environment of rivers	2.8	34.3	33.8	22.0	7.2	3.03	0.982	
P6. I identify strongly rivers	2.0	7.8	34.8	42.3	13.3	2.43	0.887	
P7. Visiting rivers says a lot about who I am	1.5	7.2	33.0	42.8	15.5	2.37	0.882	0.773
<i>Place affect</i>						2.73		
P8. I feel a sense of belonging to rivers	1.5	11.0	36.8	39.5	11.3	2.52	0.887	
P9. I feel familiar with rivers	2.5	23.8	40.0	28.7	5.0	2.90	0.904	
P10. Rivers mean a lot to me	1.3	18.5	43.3	30.0	7.0	2.77	0.874	
<i>Place social bonding</i>						2.6		0.833
P11. I like visiting rivers with my family and friends	3.3	22.3	42.8	26.0	5.8	2.91	0.915	
P12. I have had connections built with other people by visiting rivers	1.5	5.8	31.8	44.0	17.0	2.31	0.872	
P13. People who are important to me also like to visit rivers	2.5	11.3	39.8	35.0	11.5	2.58	0.922	
All items follow the Likert scale of 1 to 5 from strongly disagree to strongly agree. R: Reserve-coded item								

The mean scores of place attachment items were generally low, ranging from 2.31 to 3.25 (Table 2), suggesting that many respondents do not feel attached to urban rivers in Hong Kong. Concerning the four subconstructs of place attachment, respondents rated place dependence as the most important construct, with a mean score of 3.08, and place identity and place social bonding scored only 2.62 and 2.6 on average, respectively.

There were a few items for which respondents showed high levels of agreement. Respondents generally agreed that rivers can provide a space for resident recreation (3.25), that they enjoyed the environment of rivers more than other areas (3.04), and that they feel connected to the environment of rivers (3.03). The Cronbach's alpha scores of the four subconstructs ranged from 0.751–0.879.

4.4. Logistic Regression Analysis

The variables that could potentially be used to predict positive and negative votes regarding WTP were assessed by logistic regression analysis (Table 3). Attitude was found to be a positive predictor of positive votes ($p = 0.02$), i.e., respondents with positive attitudes toward river revitalization were more likely to be willing to pay a certain amount. Likewise, place dependence ($p = 0.015$) and place identity ($p = 0.001$) also displayed positive relations with the WTP of respondents. The Nagelkerke R^2 obtained for the two constructs as predictors was 0.214, which indicated a good level of explanatory power.

Table 3. Logistic regression analysis of positive votes and negative votes in willingness to pay (n = 400).

	B	SE	Significance	Odds Ratio
(Constant)	−5.388	1.052	0.000	0.005
Attitude	0.582	0.251	0.020	1.790
Place attachment				
Place dependence	0.510	0.210	0.015	1.665
Place identity	0.819	0.240	0.001	2.267
Place affect	0.112	0.265	0.674	1.118
Place social bonding	0.028	0.223	0.900	1.028
Nagelkerke R^2			0.214	
Hosmer and Lemeshow test		35.508, df = 8, $p > 0.05$		

Reference category: Negative votes.

4.5. Ordinal Regression Analysis

To further analyse the bid amount of WTP in association with the predictors, an ordinal regression analysis was employed (Table 4). Unlike in the results of logistic regression, place identity was not a significant determinant of the bid amount of WTP. However, significant results were obtained in all other cases. Attitude ($p = 0.000$), place dependence ($p = 0.001$) and place social bonding ($p = 0.000$) were positively correlated with the amount of WTP. In contrast, place affect ($p = 0.006$) negatively influenced the amount of WTP of respondents. The total variance explained in terms of Nagelkerke R^2 was 32.3%, implying that the two constructs and corresponding subconstructs are powerful in explaining the bid amount of WTP.

Table 4. Ordinal regression analysis of the relationship between willingness to pay with attitude and place attachment (n = 268).

	Estimate (95% CI)	SE	Significance
Attitude	1.627 (1.166–2.087)	0.235	0.000
Place attachment			
Place dependence	0.736 (0.302–1.171)	0.222	0.001
Place identity	−0.289 (−0.81–0.231)	0.265	0.276
Place affect	−0.763 (−1.31–−0.215)	0.279	0.006
Place social bonding	0.752 (0.332–1.172)	0.214	0.000
Nagelkerke R^2	0.323		

Dependent variable: Willingness to pay.

5. Discussion and Recommendations

This study explored the association between the attitude and place attachment of Hong Kong residents regarding rivers and river revitalization and their willingness to pay for revitalization. In both the logistic and ordinal regression analyses of predictor variables and WTP, most regression relations were statistically significant. Additionally, considering the fairly high explanatory power reflected by the R^2 values in both tests, it can be concluded that this attempt to employ attitude and place attachment as predictors of WTP was successful.

As there were no previous studies in the same context in Hong Kong, the results of a few examples of river restoration valuation studies outside Hong Kong should be compared the valuation results of this study. In terms of the bid amount, Bae [30] showed that people were willing to pay an average amount of USD 25 to USD 50 for improvements associated with the natural and recreational attributes of river restoration. Bliem and Getzner [21] found that Austrians were willing to pay EUR 26 to 34 (equivalent to approximately USD 31–41) for river revitalization. Halkos and Matsiori [38] reported a mean WTP of EUR 33.78 among Greek citizens (equivalent to approximately USD 40). When compared to these studies, the WTP amounts of respondents in the current study were relatively

low, as more than 75% of respondents were willing to pay only HKD 200 (equivalent to approximately USD 25) or less; however, it should be noted that the scenario proposed and original conditions of the rivers in all studies were not identical. Nevertheless, the WTP identified here still serves the purpose of gauging the level of support of Hong Kong residents for river revitalization. Halkos and Matsiori [38] also demonstrated that it may not be uncommon for people to refuse to pay, as they think the state should be responsible for conserving the environment; this mindset is consistent with the reason stated by the majority of negative bid voters in the current study. Having two-third of the respondents to be willing to pay is still a considerable proportion, when compared to studies on willingness to pay for other public goods and services that are generally considered more crucial to daily lives, like energy supply [57], transport services [58], and health care services [59], etc., where positive bid voters on WTP ranged from a few percent to around 60%. Again, the context and study area of these examples may influence the proportion of positive bid voters; however, it still shows that a considerable amount of people are perceiving river revitalization to be as significant as other public services that concerns the everyday lives of people.

By considering WTP in both monetary terms and personal value in relation to urban rivers and river revitalization, the relationships among attitude, place attachment, and WTP were explored. The positive correlations between attitude toward river revitalization and positive bid votes, as well as the WTP bid amount, were expected. Notably, from the attitude questionnaire items, people supported river revitalization most because rivers are an important natural resource, and preserving rivers may improve society and the environment. Thus, people are more concerned about the benefits of river revitalization related to improving society and natural resources than for their personal enjoyment (e.g., recreational use of rivers). This finding provides insight for future river revitalization work and policy formulation; notably, improving the environment of urban rivers and promoting nature may be keys for gaining support from the public.

The place attachment subconstructs displayed varying results. It was particularly surprising that the place effect was negatively associated with the bid amount of WTP. The place effect describes the emotional association of people with a place and the related settings that foster psychological well-being [48,51]. It is not common for this variable to be negatively related to other pro-environmental variables, e.g., environmental behaviours; specifically, López-Mosquera and Sánchez [40] previously demonstrated a positive linkage between such variables. One reason to explain this correlation could be the triggering of protective behaviour by the place effect [48]. Protected behaviour refers to when people with a high level of place affection want to preserve the current conditions of a place to which they are emotionally attached. In this sense, revitalization or other alternative works may lead to negative emotions if the current setting changes. While such protected behaviour may lead to positive effects related to the conservation of unaltered or undisturbed environments, e.g., native forests [48], in supporting the protection of the resources in concern, difficulties may arise in scenarios in which already-altered environments are being modified or improved, thus increasing the difficulty of revitalization projects. In the case of Hong Kong, such a result may imply the need to conserve or at least recreate elements and features of the current urban rivers in future revitalization work. This approach may create a familiar environment for people, especially those affectionally attached to urban rivers.

In contrast to the result of the effect, the other three subconstructs, place dependence, place identity, and place social bonding, were all positively correlated with positive WTP votes or WTP amounts; this finding is consistent with those of previous studies that investigated place attachment and WTP [60,61]. The place dependence and place social bonding results suggest that residents with high levels of dependence on the environment and resources that urban rivers provide, as well as the space for social interactions, tended to value rivers more. Both the associations of place attachment and WTP here may point toward the same issue—these groups of residents rely greatly on the public spaces of urban rivers. Such an issue may imply that urban rivers and adjacent environments are important

urban nature-based spaces with various purposes. River environments are not always discussed in Hong Kong in regard to urban nature-based spaces, and more often, such spaces refer to urban parks and urban green spaces. Given that urban parks and urban green spaces are already lacking in Hong Kong [62], river environments that can provide similar recreational, environmental, and social functions may further justify the need for river revitalization projects and policies.

6. Conclusions

This study explored the valuation of Hong Kong residents in terms of WTP based on a proposed river revitalization scenario along with two psychological constructs of attitude and place attachment. Over 60% of respondents in the study were willing to pay a certain amount and support river revitalization in Hong Kong, while the majority of respondents that were not willing to pay for such proposed scenario expressed that river revitalization should be the responsibility taken by the government instead of citizens. The regression results between the WTP of respondents and their attitude, place dependence, place identity, and place social bonding were mostly consistent with those in the literature, indicating positive relationships between attitude and place attachment and WTP. Place affection, as an exception, negatively influenced the amount of WTP of respondents. These results implied that emphasis on river revitalization should be placed on restoring the natural environment and creating a good overall image for the city and society. Additionally, certain existing features and elements of urban rivers should be conserved to provide a feeling of familiarity.

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