



Article Preferences of Young Adults concerning the Pocket Parks with Water Reservoirs in the Aspect of Willingness to Pay (WTP) in Warsaw City, Poland

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Abstract: The paper presents the results of a survey questionnaire conducted in order to determine the social preferences of young adults regarding their willingness to finance pocket parks in Warsaw (Poland). The preferences concerned the impact of the appearance and attractiveness of pocket parks for the inhabitants of the capital, the impact on the microclimate, the materials used to build water reservoirs, and the effect of the respondent's income on their willingness to finance them. The data were analyzed statistically (Kruskal-Wallis test, Mann-Whitney U logistic regression). The results show that young respondents prefer parks with natural water reservoirs. Willingness to pay was the highest in the case of natural parks and parks containing the most anthropogenically modified water reservoirs. It has been shown that the willingness to finance increased with the need for more greenery of this type and greater awareness of their positive impact on the improvement of the microclimate in the city. The higher the attractiveness of pocket parks for leisure and the higher the level of respondents' incomes, the greater the willingness to finance them. The level of financing also depended on the materials used to build water reservoirs in parks-the more elements made of hydrotechnical concrete, the higher the level of financing. This type of relationship was not found for natural materials, which is surprising given the already well-known threat of climate change and the decrease of biodiversity.

Keywords: pocket parks; water reservoirs; preferences; willingness to pay; Warsaw

1. Introduction

According to the report concerning the concept of the "cities of tomorrow", made by urban experts and representatives of European cities [1], cities are the key to achieving the sustainable development of the European Union. In the vision presented in this report, the future city should be distinguished with such features as being a place of advanced social progress (e.g., high degree of social cohesion, and social, health, and education services for all residents); a platform of democracy and cultural dialogue; and



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Copyright: © 2022 by the authors. Licensee MDPI, Basel, Switzerland. This article is an open access article distributed under the terms and conditions of the Creative Commons Attribution (CC BY) license (https:// creativecommons.org/licenses/by/ 4.0/). a place of attraction through green, ecological, and environmental regeneration, with compact settlement units containing big green areas and public spaces, as well as an energy-saving and carbon-neutral economy-the city of the future should be a green and high-life-quality city. Urbanization is often perceived as an environmental threat, yet the problem of environmental protection on the global scale is mostly appreciated. The strive for environmental quality cannot be reduced to a fight against the city, in general, as a civilization phenomenon. This would be equal to a utopian attempt for an illogical civilizational retreat. The essence of modern culture is related to the urban economy. Urbanization is a socio-economic process, associated with the progress of the scientific and technological revolution, with the concentration of productive forces and forms of social relations, and with the spread of the urban image of life and modernization to the entire settlement network. According to the common, although wrong, opinion, paved urban surfaces are more prestigious solutions than natural surfaces, for example, those covered with earth or vegetation. Attributes in favor of paved surfaces are the functional aspects and ease of maintenance, though by including the costs associated with its establishment and subsequent rainwater management problems, the balance is no longer so obvious. Excessive surface sealing is further compounded by poor water quality, concreted riverbeds, reduced cross-sections of riverbeds, and a lack of floodplains. These problems are increased by the threats resulting from global warming. Visions of ecological cities that are healthy, properly planned, and functioning without threats to the environment have long been the idea of many architects, resulting in the concepts of blue and green infrastructure [2]. Green areas are represented by urban parks, forests, river courses and reservoirs, and historical parks, squares, and cemeteries, etc., [3]. These elements are very important for biodiversity, ensuring the survival of native plants and animals within their habitats, minimizing air and soil pollution, increasing air humidity and oxygen production [4,5], as well as recreation. From the all-environmental components of green areas, the quality of vegetation and water has been studied and analyzed by many researchers because of their importance in ecosystem services in cities [6–11]. Cities are among the major emitters of pollutants to water. On the other hand, water and greenery largely determine the quality of life, being the most important elements of ecohydrological water management. Water, being a multifunctional resource, affects the economy, space, and society, as well as cultural and environmental issues. Hydrotechnical facilities affect the actual city potential, as well as its image. Larger hydraulic structures, such as weirs, barrages, or dams, may play industrial, and protective roles, but simultaneously their aesthetic values are often neglected at the expense of a good technical condition. Small hydraulic structures have entered the urban space not only in the form of bridges or culverts, whose utilitarian aspects are obvious and paramount. Hydrotechnical engineering in cities began to be present in the form of objects serving leisure and recreation. Small hydrotechnical structures create spaces suitable for organisms, also ensuring the continuity of fish migration through the use of gabion or discontinuous structures (e.g., stone blocks) [12,13]. The opportunities for economic and social development, determined by proper water resources management, have been recognized and included in many national and international legal commitments. UNESCO's Water Agenda proposes the following aims: to reduce water pollution from major sources by 30% by increasing urban wastewater collection and treatment to at least 80%; to increase industrial wastewater treatment to at least 95%; and to reduce pollution from diffuse sources by 30%, taking action to reduce pollution at its source by 2030 [14,15]. This high priority for urban water issues is due to the fact that more than half of the global population already lives in urbanized areas, and the rate of urbanization has never been so high. Areas with surface water could represent habitats for aquatic and riparian plants (vegetation and water, in turn, determine the composition of fauna species) and make urban areas more attractive for recreation [16]. According to the Convention on Biological Diversity (Rio de Janeiro, 1992) and the Local Agenda 21, sustainable green and blue infrastructures are crucial for maintaining the city environment, providing possibilities for recreation and human well-being connected with green areas. Urbanization (densely

built-up areas, new roads, emission of pollution, and high temperature, etc.) is still the active process in cities [17] where the existing green areas are under pressure (struggling to keep their size) and the new green areas may not be designed on big surfaces in many districts, mostly in the central parts of cities. So, it is important to design smaller types of green areas, such as pocket parks, which will be useful for local people, improve their well-being in cities. The pocket park, also named the mini-park, vest-pocket park, or vesty park, is a small park with an area of not more than 5000 m² in general [18]. The concept of the pocket park was developed in the USA, mostly in very urbanized parts of cities. Pocket parks can be designed on public or private lands located in urban and suburban areas. Mostly, there are no places for the design of new urban parks in densely built-up areas where land prices are very high in the city. Despite this, people need green areas, even small ones, and so pocket parks could allow for their contact in mini-scale with greenery, water elements, and small architectural forms, creating cozy places for the better integration of city residents [19,20]. Such parks also provide the possibility for recreation close to home or work places.

The definition of pocket park does not exist in legal regulations in Poland, but these objects began to be designed in the big cities, such as Warsaw and Cracow. Pocket parks can be one of the innovative ways to create more urban green spaces. Therefore, it is important to know the opinions of the city's inhabitants, especially young adults (who are conscious users of public spaces and green areas and are soon be responsible for landscaping), about innovative forms of green areas, such as pocket parks, which can be beneficial elements that complement green and blue infrastructures in the city. When designing and establishing pocket parks, an important issue is not only to identify social preferences regarding their appearance, size, aesthetics, and quality of recreational facilities, but most importantly, their value depends on their acceptance by residents and their willingness to finance, protect, develop, or modernize them. Warsaw is the biggest city in Poland, where the problem with designing the new big-sized green areas exists because of densely built-up areas in numerous city districts.

The aim of the study is to determine the preferences and factors that can increase the willingness to pay (WTP) for pocket parks among city residents.

Hypothesis 1 (H1). *Pocket park preferences and willingness to pay (WTP) depend on the natural appearance of the water reservoirs in these pocket parks.*

Hypothesis 2 (H2). *Preferences for creating more pocket parks with water elements in cites are correlated with preferences for funding (WTP) received by young adults.*

Hypothesis 3 (H3). *A higher family income has an impact on the preferences for financing (WTP) pocket parks.*

2. Materials and Methods

2.1. Study Areas

According to the assumed goal of the study and the research problems formulated, the survey questionnaire included questions regarding preferences for the importance and suitability of water features. Participants were 321 young adults, students (18–37 years old) from Warsaw University of Life Sciences–SGGW in Warsaw, Poland. In the future, they could shape the green areas of cities because they study landscape architecture, urban gardening, and forestry. The family places of residence of these students were represented by cities, towns, and villages. They filled the questionnaire in May 2021, in which the questions concerned presented pocket parks with different types of water reservoirs (Figure 1).

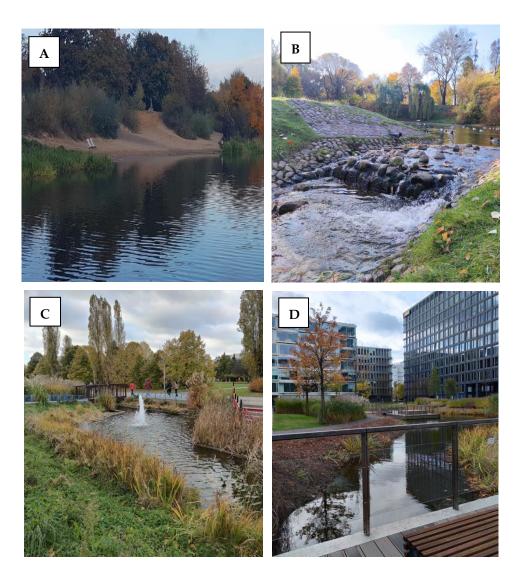


Figure 1. Pocket parks with the different types of water reservoirs: (**A**)—a natural water reservoir with accompanying aquatic and rush vegetation; (**B**)—a semi-natural water reservoir, with accompanying water and rush vegetation of a linear or surface character, with the participation of small hydrotechnical structures made of environmentally friendly materials (stone, wood, and gabions); (**C**)—a medium-anthropogenically transformed water reservoir of a linear or surface character, with a significant share of water and rush vegetation, and the introduction of regulatory elements made of environmentally friendly materials and elements that play a communication role (bridges, walls, and balustrades) or an aesthetic role , e.g., fountains, cascades, and sculptures; (**D**)—a water reservoir strongly anthropogenically transformed, of a linear or surface character, with a negligible share of water and rush vegetation or only with introduced decorative vegetation, with the introduction of hydraulic concrete regulatory elements and elements serving only a communication role (bridges, walls, and balustrades) or an aesthetic role, e.g., fountains, cascades, and sculptures (photos: Beata Fornal-Pieniak, Marta Kiraga, 2021).

2.2. Methods and Statistical Analysis

The research has been conducted with the use of the original questionnaire. According to the assumed goal of the study and the research problems formulated, the survey questionnaire included questions regarding preferences for the importance and suitability of water features. Due to the hypotheses and statistical analyses used, only these questions selected from the questionnaire were used. To verify Hypothesis 1, in order to assess whether the pocket-park-type variables affected the level of park preferences (2 variables), a non-parametric Kruskal–Wallis test was used. Due to the limitations of the analysis arising from the nature of the variables, in order to examine the level of differences between pairs of variables, a non-parametric Mann–Whitney U test was used for a deeper statistical analysis.

Variables analyzed for H1:

Impact of the appearance/condition of water reservoirs on the attractiveness of a pocket park for different types of pocket parks types (A–D): A—a natural water reservoir with accompanying aquatic and rush vegetation; B—a semi-natural water reservoir; C—a medium-anthropogenically transformed water reservoir; D—a water reservoir strongly anthropogenically transformed (types are shown in photos and detailed descriptions in Study Areas section).

F1—more pocket parks in cities are recommended (five-point scale: 5 meaning that the respondent strongly agrees with a statement, 4— agrees, 3—neither agrees nor disagrees, 2—does not agree, and 1—strongly disagrees with a statement).

F2—the current appearance of the water reservoirs/facilities should be preserved with the addition of recreational infrastructure elements for different types of pocket parks (types A–D) (five-point scale: 5 meaning that the respondent strongly agrees with a statement, 4— agrees, 3—neither agrees nor disagrees, 2—does not agree, and 1—strongly disagrees with a statement).

Logistic regression analysis was performed to verify the second and third hypotheses. The analysis was summarized by using logistic regression—an econometric tool allowing the impact of factors (variables) on the willingness to pay (WTP) for pocket parks.

This type of regression allows the determination of the effect of multiple independent variables (regressants) on a dichotomous dependent variable (regressor). A dichotomous qualitative variable (Question I from the survey) was used as the dependent variable of the logistic regression model to make a prediction of "pocket park funding readiness". The values of the dependent variable (regressor) are "Yes" or "No". The predicted value is "Yes". In the regression aimed at predicting the financing of pocket parks, more independent variables (explanatory variables) were used whose influence on the decision to finance parks they wanted to evaluate. Only those that qualified for the model (whose effect on the dependent variable was statistically significant at the $\alpha = 0.05$ significance level) are presented in Table 5. The obtained values of the regression coefficients make it possible to determine the OR odds ratios while maintaining the other variables at a constant level.

In the logistic regression model, the dependent variable Y signified the WTP for specific independent variables. Here are the seven variables:

- F1—More pocket parks in cities are recommended (five-point scale: 5 meaning that the respondent strongly agrees with a statement, 4—agrees, 3—neither agrees nor disagrees, 2—does not agree, and 1—strongly disagrees with a statement);
- F2—There should be more funding for pocket parks (five-point scale: 5 meaning that the respondent strongly agrees with a statement, 4—agrees, 3—neither agrees nor disagrees, 2—does not agree, and 1—strongly disagrees with a statement);
- F3—Pocket parks' influence on improving the urban microclimate, e.g., by purifying the air (dichotomous nominal variable);
- F4—Pocket parks are/could be attractive places for recreation for residents and tourists;
- F5—Introduction of hydrotechnical elements made of environmentally friendly elements, such as stone, wood, and gabion elements, have a positive effect on the aesthetics of water reservoirs (five-point scale: 5 meaning that the respondent strongly agrees with a statement, 4—agrees, 3—neither agrees nor disagrees, 2—does not agree, and 1—strongly disagrees with a statement);
- F6—The introduction of hydrotechnical concrete elements has a beneficial effect on the aesthetics of water reservoirs (five-point scale: 5 meaning that the respondent strongly

agrees with a statement, 4—agrees, 3—neither agrees nor disagrees, 2—does not agree, and 1—strongly disagrees with a statement);

 F7—Income per capita in EUR of the respondent's income—quantitative variable categorized by per capita income in order to divide the respondents into 3 groups according to the affluence of their household, treated as a rank variable after categorization. Additionally, the respondent's gender—dichotomous nominal variable.

Analyses of each set of independent variables and models generated upon their basis were carried out to verify the following: the statistical significance of model parameters, the accuracy level of case classification, and the assessment of the model's adjustment to the data.

To assess the statistical significance of the test statistics in the Kruskal–Wallis test, the Mann–Whitney U test, and the structural parameters for the logistic regression models, the assumed significance level was $\alpha = 0.5$.

3. Results

Participants of the research were aged between 18 and 37 (average—21.95 years). Women constituted 42.95% of the entire group, and men 57.05%. A total of 90.88% of respondents declared having secondary education, whereas the remaining 9.12% reported having higher education. The largest groups (41.56%) were the students from cities with over 100,000 residents and those with an income between EUR 521 and 800 per person (50.34%). The following groups were residents of rural areas (19.38%), and towns of up to 50,000 residents (17.60%) and over 50,000 residents (21.56%). Income under EUR 521 was reported by 27.18% of the respondents, whereas another 22.48% declared income over EUR 801 (Table 1).

Table 1. Socio-demographic structure of the research group accounting for selected characteristics.

	Gend	ler (%)				
Fe	male	Male				
42	2.95	57.05				
	Educa	tion (%)				
Seco	ondary	Higher				
9	0.88	9.12				
Place of residence (%)						
Rural areas	Towns up to 50,000 residents	Towns 50,000–100,000 residents	Cities over 100,000 residents			
19.38	17.50	21.56	41.56			
	Per capita	income (%)				
Up to EUR 521	EUR 521–800 (2)		EUR 801 and more			
(1)		(3)				
27.18	50	22.48				

To verify H1, namely whether the impact of the appearance/condition of the water reservoirs on the attractiveness of a pocket park level was dependent on the water reservoir's natural character, the Kruskal–Wallis test was executed. At the significance level of $\alpha = 0.05$, it was demonstrated that the pocket park's natural character level made a significant difference in the perception of the pocket park (Type A—the most-natural water reservoirs, Type D—the least-natural water reservoirs).

In the case of the impact of the appearance/condition of water features on the attractiveness of a pocket park, the respondents rated the Type A pocket park the highest (232.43 rank average), and Type D the lowest (117.89 rank average). The Kruskal–Wallis test employed confirmed that there were statistically significant differences between the pocket park type and this variable (Table 2).

Table 2. Relation between the type of pocket park (water reservoir's natural character) and preference variables (means of ranks, Kruskal–Wallis test).

Type of Park ¹	Α	В	С	D	<i>p</i> -Value
Impact of the appearance/condition of water reservoirs on the attractiveness of a pocket park.	232.43	146.36	141.82	117.89	<0.0001
The current appearance of the water reservoirs/facility should be preserved with the addition of recreational infrastructure elements	150.37	155.01	158.26	175.83	0.001

¹ A—A natural water reservoir with accompanying aquatic and rush vegetation; B—a semi-natural water reservoir; C—a medium-anthropogenically transformed water reservoir; D—a water reservoir strongly anthropogenically transformed (types are shown in photos and detailed descriptions in Study Areas section).

In order to precisely verify the statistically significant relationship between a foresttype preference level and its development level, pairs of forests were compared using the Mann–Whitney U test.

In the case of the impact of the appearance/condition of water reservoirs on the attractiveness of a pocket park, all the correlations were statistically significant, with the exception of the comparison between the B and C pocket park types. In the case of the opinions on preserving the current appearance of water reservoirs/facilities with the addition of recreational infrastructure elements there is only correlation between D-type pocket parks and A- and B-type pocket parks (Table 3).

Table 3. Statistical dependence between the type of pocket park (water reservoirs natural character) and preference levels (Mann–Whitney U test for pairs of pocket park types).

	Impact of the Appearance/Condition of Water Reservoirs on the Attractiveness of a Pocket Park			Reservoirs/Fa with the A	t Appearance o acility Should I addition of Rec structure Elem	Be Preserved creational
-	В	С	D	В	С	D
А	11.80 *	12.42 *	15.70 *	1.00	1.00	0.00 *
В		0.62	3.90 *		1.00	0.03 *
С			3.28 *			0.10

* Statistically significantly different p < 0.05.

The presented results allow for the partial verification of H1, i.e., in the case of attractiveness of a park there was a relationship in that young respondents prefer parks with natural water reservoirs.

The respondents' declarations regarding their opinion about the current appearance of the water reservoirs/facilities, namely that they should be preserved with the addition of recreational infrastructure elements, also showed statistically significant differences depending on the pocket park type. However, although the Type D pocket park (175.84 means of ranks) was the most preferred among the respondents, the least preferred pocket park turned out to be Type A (150.37 means of ranks).

In addition, it was investigated whether the level of preference for a particular type of pocket park depended on the propensity of consumers to finance this type of park. Regarding the influence of the appearance/condition of the water reservoirs on the attractiveness of the pocket park, statistically significant difference between the opinions of consumers who were willing or unwilling to pay were shown for pocket parks A and D, i.e., the most natural and the most anthropogenically modified water reservoirs. However, when it comes to the importance of maintenance, the current appearance of the water reservoirs/facilities with the addition of recreational infrastructure elements showed a statistically significant difference between opinions about the C-type pocket park (Table 4).

Table 4. Preference for each pocket park type in relation to respondents' willingness to finance them (average, Mann–Whitney U test).

Type of Pocket PARK ¹	WTP	No WTP	Z	<i>p</i> -Value			
Impact of the appearance/condition of water features on the attractiveness of a pocket park.							
А	3.25	2.32	-5.39	< 0.0001			
В	1.83	1.80	-0.09	0.9266			
С	1.78	1.61	-1.85	0.0679			
D	1.53	1.47	-2.07	0.0428			
The current appearance of the water feature/facility should be preserved with the addition of recreational infrastructure elements.							
А	2.00	2.11	-0.93	0.3545			
В	2.05	1.98	-0.98	0.3279			
С	2.15	1.81	-3.15	0.0017			
D	2.29	2.14	-1.26	0.2087			

¹ A—A natural water reservoir with accompanying aquatic and rush vegetation; B—a semi-natural water reservoir; C—a medium-anthropogenically transformed water reservoir; D—a water reservoir strongly anthropogenically transformed (types are shown in photos and detailed descriptions in Study Areas section).

The presented results allow for the partial verification of H1, i.e., in the case of the attractiveness of a park there was a relationship that young respondents prefer parks with natural water reservoirs

A logistic regression test was performed to examine factors related to the possibility of influencing consumer preferences, which, if changed, could reflect an increase in the propensity to finance pocket parks. The model had a good fit parameter (the C statistic is 0.93). Variables were selected using the backward elimination method and only variables with a p value < 0.05 were included.

Positively, an increase in the chance of pocket park funding can be affected by an increase in opinion on recommending more pocket parks in cities; each single level increase in this opinion results in a 124% increase in the chance of funding pocket parks (OR: 2.239; 95% CI: 1.25–4.00). Additionally, when consumers have a positive opinion about the need to fund such parks, each single level increase in opinion results in a 98.2% increase in the opportunity to fund pocket parks (OR: 1.982; 95% CI: 1.21–3.25).

Consumers who are unaware of the positive impact of pocket parks on improving urban microclimates, e.g., cleaning the air, are 66.4% less likely to fund them compared to those with the opposite opinion on this matter (OR: 1.982; 95% CI: 1.21–3.25). Those with no opinion on the question "Pocket parks are/could be attractive places for recreation for residents and tourists" are 93% less likely to fund pocket parks compared to those with a positive opinion on the topic.

In the case of water elements in pocket parks, an increase in the opinion of respondents on improving the aesthetics of the water reservoirs by introducing water elements with environmentally friendly elements resulted in a 54.57% decrease in the chance of funding the parks (OR: 0.453; 95% CI: 0.27–0.76). At the same time, in the case of an increase in the opinion on increasing the aesthetics of a water body by implementing hydrotechnical concrete elements resulted in a three-fold increase in the chance of pocket park funding (OR: 2.979; 95% CI: 1.97–4.52).

If income per capita (converted to EUR and divided into three categories) increases, the chance of funding pocket parks rises as income grows. If this income is in the range of EUR 521-800, the chance increases by eight times for people with an income below EUR 520 per person (OR: 7.995; 95% CI: 2.74–23.36), and for those with an income above EUR

800 per person the chance increases by more than 17 times for those with the lowest income (OR: 17.599; 95% CI: 5.13–60.40) (Table 5).

Table 5. Values of estimated variables in the logistic regression model.

Variable	Level	Estimate	Point Estimate	95% Wald Confidence Limits		<i>p</i> -Value
Intercept		-4.618				< 0.0001
F1 More pocket parks in cities are recommended		0.806	2.239	1.253	4.001	0.0065
F2 There should be more funding for pocket parks		0.684	1.982	1.208	3.253	0.0068
F3 Pocket parks influence on improving the urban microclimate, e.g., by purifying the air	No Yes (ref)	$-1.092 \\ 0$	0.336	0.135	0.832	0.0184
F4 Pocket parks are/could be attractive places for recreation for residents and tourists	No No opinion Yes (ref)	$2.374 \\ -2.670 \\ 0$	10.742 0.069	<0.001 0.013	>999.9 0.379	0.9810 0.0021
F5 Introduction of hydrotechnical elements made of environmentally friendly elements, such as stone, wood, and gabion elements, have a positive effect on the aesthetics of water reservoirs		-0.792	0.453	0.272	0.755	0.0024
F6 The introduction of hydrotechnical concrete elements has a beneficial effect on the aesthetics of water reservoirs		1.092	2.979	1.965	4.517	<0.0001
	EUR 801 and more	2.868	17.599	5.128	60.397	< 0.0001
F7 Income per capita in EUR	EUR 521–800 EUR up to 521 (ref)	2.079 0	7.995	2.736	23.366	0.0001

4. Discussion

Pocket parks, which belong to green and blue infrastructures, are designed to provide ecosystem services and biodiversity protection [21]. In Warsaw, pocket parks are usually created on the initiative of residents and are financed from civic budgets in municipalities [22]. Currently, there are not a large number of pocket parks in Warsaw, but according to the surveys, there is a need to design more of this type of green area.

The quality of life in the city is undoubtedly improved by more green areas, which provide many physical, psychological, and social benefits for residents [23–25], regardless of their area and kind/type. Research conducted among Warsaw's young residents indicates that respondents are willing to pay more for the maintenance of pocket parks, if more such facilities are established. Additionally, also important is the fact that these areas are open to the public, often with an infrastructure conducive to recreation, which is not without significance. Even though these objects are mostly small green spaces, their significance to the population is very high [26-30] especially in the era of the COVID-19 pandemic [19]. The willingness to pay by young adults for urban forestry itself is variable and depends on many factors, including, for example, the structure of the forest and small architecture, etc., [23,31–35]. Determining the accuracy and reliability of the hypothetical WTP amounts reported is also significant. The discrepancies between hypothetical declarations and actual payments confirm that this is difficult to verify [36,37]. The text surveys the opinion of over 300 full-time and extramural students of the university with traditions related to the protection and shaping of the environment, which was even emphasized in the name of the university—Warsaw University of Life Sciences-SGGW.

Almost 80% of the respondents of young adults declared their willingness to pay for the maintenance and eventual financing of pocket parks in Warsaw. This is a similar level of indicator compared to the other studies on forests located in urban areas. This is in comparison to 76% in UK urban recreational parks [38], and in the territory of Finnish Joensuu, urban forests varied from 62% to 84% [39] (depending on question options). Higher WTP was found in Tarnów city's urban forests in Poland—97% [40]. The city's green spaces are attractive for residents' recreation [41]. This is confirmed by studies in the urban forests of Tarnów, which showed and proved that young respondents were very willing to rest in forest areas in cities. The urban forests with park features and numerous elements of small recreational architectures were of particular interest to young adults [35]. The study showed that as awareness of the attractiveness of green spaces increases, the willingness to fund them grows. The most important factor in choosing urban parks for recreation is often their aesthetics [25]. The presence of natural and cultural values and the availability of facilities for recreation, their technical condition, and the level and quality of tourist services, also affect the level of funding. This confirms that WTP defines social attitudes, not the economic opportunities of the respondents themselves [42,43]. Other determinants of the dependency of the WTP contributions to the pocket parks are the appearance of the parks and the selection of materials used in the planning of the recreational infrastructure. The conducted surveys indicate that as the amount and quality of hydraulic concrete components used in water reservoirs increase, respondents are willing to contribute higher amounts of WTP. So, according to the opinion of young adult respondents, the elements made of this material have a positive impact on the esthetics of water reservoirs in pocket parks and the other types of greenery [35]. Such a relation was not indicated for the use of natural elements, such as stone or wood, which is surprising given the already well-known threat of climate change, the decrease of biodiversity, and an advanced environmental education at all learning levels (perhaps this education is not efficient enough). Perhaps this is because in the long term, in the mind of young respondents, the concrete still looks more attractive in comparison to natural materials, e.g., wood, which with the passing of time is rotting, mucking, and decaying. It is fair to assume that in the future, there will be no need for additional costs to upgrade concrete elements. They are more permanent and resistant to damage and water and wind erosion. The choice of concrete elements as the most desirable building material of hydrotechnical structures is surprising. Perhaps the respondents were guided by the colloquial definition of the water structure, as one that requires solid, sealed foundations, and any filtration is a negative phenomenon. On the other hand, the results of the study may lead to a wider discussion on the effectiveness of environmental education in terms of the ecological sensitivity of young people. A higher level of the young respondents' preferences for water reservoirs with elements made of hydrotechnical concrete is in some discordance with the lower direct availability to water for people and wild animals in such artificial water reservoirs (the respondents do not feel the need for wild animals to have the availability to water?). This is an important message for the municipal authorities, as it indicates the need for interdisciplinary expert teams to manage green areas and the necessity for the better ecological education of inhabitants. The level of financing in green urban areas is undoubtedly influenced by the wealth of the individual respondents, householders, as well as the whole society [44,45]. In general, it has been noted that the richer the society, the higher the WTP [38,46–51]. The research carried out in Warsaw pocket parks is in line with this trend. However, there is no shortage of scientific reports that do not support this relationship [33–35,38,43,52]. This possibly comes from the fact that most often no entrance fees are charged to these types of facilities, and any costs of maintaining them are usually borne by local/municipal or state budgets.

5. Conclusions

These research results will be practical and very valuable in supporting future management and planning processes for the access to public green areas and their use in large urban agglomerations. Moreover, public consultations regarding the preferences of users about green areas are very important, which was confirmed by the example of the survey conducted on pocket parks in this article. The results of these consultations will make it easier for protectants who design the pocket parks in line with the expectations and preferences of young adults. This is a very positive aspect for further new green areas. People know that they have an impact on design new green spaces in the city. Moreover, they want to support the founding of this type of green area, so it means that they are responsible for them. It is important to increase the ecological education of young adults focused on the significant functions of natural elements in the urban landscape. Actual knowledge about this issue is not satisfactory, which was presented in our results. Furthermore, the same young adults, after completing their studies, should complete once again this questionnaire. We will have achieved answers if they (young adults) have better knowledge of the role of natural elements in green areas. If the results are similar (insufficient knowledge about natural elements in urban areas), the education program in universities should probably be modified. The conclusion is that good specialists are required to develop the concept of the green city, which is strictly connected with the quality of education.

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References

- 1. European Commission; Directorate-General for Regional Policy. *Cities of Tomorrow: Challenges, Visions, Ways Forward*; European Commission: Brussels, Belgium, 2011.
- 2. Puplampu, D.A.; Boafo, Y.A. Exploring the impacts of urban expansion on green spaces availability and delivery of ecosystem services in the Accra metropolis. *Environ. Chall.* **2021**, *5*, 100283. [CrossRef]
- 3. Byomkesh, T.; Nakagoshi, N.; Dewan, A.M. Urbanization and green space dynamics in Greater Dhaka, Bangladesh. *Landsc. Ecol. Eng.* **2012**, *8*, 45–58. [CrossRef]
- 4. Pickett, S.T.A.; Grove, J.M. Urban ecosystems: What would Tansley do? Urban Ecosyst. 2009, 12, 1–8. [CrossRef]
- Basu, S.; Nagendra, H. Perceptions of park visitors on access to urban parks and benefits of green spaces. Urban For. Urban Green.
 2021, 57, 126959. [CrossRef]
- 6. Costanza, R.; de Groot, R.; Sutton, P.; van der Ploeg, S.; Anderson, S.J.; Kubiszewski, I.; Farber, S.; Turner, R.K. Changes in the global value of ecosystem services. *Glob. Environ. Chang.* **2014**, *26*, 152–158. [CrossRef]
- 7. Duarte, D.H.S.; Shinzato, P.; Gusson, C.D.S.; Alves, C.A. The impact of vegetation on urban microclimate to counterbalance built density in a subtropical changing climate. *Urban Clim.* **2015**, *14*, 224–239. [CrossRef]
- Elmqvist, T.; Setälä, H.; Handel, S.; van der Ploeg, S.; Aronson, J.; Blignaut, J.; Gómez-Baggethun, E.; Nowak, D.; Kronenberg, J.; de Groot, R. Benefits of restoring ecosystem services in urban areas. *Curr. Opin. Environ. Sustain.* 2015, 14, 101–108. [CrossRef]
- 9. Lindley, S.; Pauleit, S.; Yeshitela, K.; Cilliers, S.; Shackleton, C. Rethinking urban green infrastructure and ecosystem services from the perspective of sub-Saharan African cities. *Landsc. Urban Plan.* **2018**, *180*, 328–338. [CrossRef]
- 10. Yu, H.; Song, Y.; Chang, X.; Gao, H.; Peng, J. A Scheme for a Sustainable Urban Water Environmental System During the Urbanization Process in China. *Engineering* **2018**, *4*, 190–193. [CrossRef]
- 11. Xing, Y.; Brimblecombe, P. Role of vegetation in deposition and dispersion of air pollution in urban parks. *Atmos. Environ.* **2019**, 201, 73–83. [CrossRef]
- 12. Bajkowska, S.; Jastrzębska, U. Studies of the impact the shape of the rock-fill sill to the flow distribution. Scientific Review. *Eng. Environ. Sci.* **2012**, *21*, 263–272.
- Kiraga, M.; Popek, Z. Geometry Description of Local Scouring Process in Various Laboratory Water Structure Models. In Free Surface Flows and Transport Processes; Springer: Cham, Switzerland, 2018; pp. 245–258.

- 14. UNESCO-International Hydrological Programme Water in the Post-2015 Development Agenda and Sustainable Development Goals; Discussion Paper; Unesco: Paris, France, 2015; p. 14.
- 15. Zalewski, M. Woda jako podstawa życia w miastwach. Zrównoważony Rozw. 2014, 5, 9–15.
- 16. Mansor, M.; Said, I.; Mohamad, I. Experiential Contacts with Green Infrastructure's Diversity and Well-being of Urban Community. *Procedia Soc. Behav. Sci.* 2012, 49, 257–267. [CrossRef]
- Kousis, I.; Pigliautile, I.; Pisello, A.L. A Mobile Vehicle-Based Methodology for Dynamic Microclimate Analysis. Int. J. Environ. Res. 2021, 15, 893–901. [CrossRef]
- 18. Mesimäki, M.; Hauru, K.; Lehvävirta, S. Do small green roofs have the possibility to offer recreational and experiential benefits in a dense urban area? A case study in Helsinki, Finland. *Urban For. Urban Green.* **2019**, *40*, 114–124. [CrossRef]
- 19. Liu, S.; Wang, X. Reexamine the value of urban pocket parks under the impact of the COVID-19. *Urban For. Urban Green.* **2021**, *64*, 127294. [CrossRef]
- Rosso, F.; Cappa, F.; Spitzmiller, R.; Ferrero, M. Pocket parks towards more sustainable cities. Architectural, environmental, managerial and legal considerations towards an integrated framework: A case study in the Mediterranean region. *Environ. Chall.* 2022, 7, 100402. [CrossRef]
- Reinwald, F.; Haluza, D.; Pitha, U.; Stangl, R. Urban Green Infrastructure and Green Open Spaces: An Issue of Social Fairness in Times of COVID-19 Crisis. Sustainability 2021, 13, 10606. [CrossRef]
- 22. Warsaw Participatory Budget. Available online: https://oidp.net/en/practice.php?id=1312 (accessed on 10 January 2022).
- Sirina, N.; Hua, A.; Gobert, J. What factors influence the value of an urban park within a medium-sized French conurbation? Urban For. Urban Green. 2017, 24, 45–54. [CrossRef]
- 24. Fang, X.; Gao, T.; Hedblom, M.; Xu, N.; Xiang, Y.; Hu, M.; Chen, Y.; Qiu, L. Soundscape Perceptions and Preferences for Different Groups of Users in Urban Recreational Forest Parks. *Forests* **2021**, *12*, 468. [CrossRef]
- 25. Wan, C.; Shen, G.Q.; Choi, S. Eliciting users' preferences and values in urban parks: Evidence from analyzing social media data from Hong Kong. *Urban For. Urban Green.* **2021**, *62*, 127172. [CrossRef]
- 26. Nordh, H.; Østby, K. Pocket parks for people—A study of park design and use. Urban For. Urban Green. 2013, 12, 12–17. [CrossRef]
- Lee, Y.-C.; Kim, K.-H. Attitudes of Citizens towards Urban Parks and Green Spaces for Urban Sustainability: The Case of Gyeongsan City, Republic of Korea. Sustainability 2015, 7, 8240–8254. [CrossRef]
- Schebella, M.; Weber, D.; Schultz, L.; Weinstein, P. The Wellbeing Benefits Associated with Perceived and Measured Biodiversity in Australian Urban Green Spaces. *Sustainability* 2019, *11*, 802. [CrossRef]
- 29. Balai Kerishnan, P.; Maruthaveeran, S.; Maulan, S. Investigating the usability pattern and constraints of pocket parks in Kuala Lumpur, Malaysia. *Urban For. Urban Green.* **2020**, *50*, 126647. [CrossRef]
- Balai Kerishnan, P.; Maruthaveeran, S. Factors contributing to the usage of pocket parks—A review of the evidence. Urban For. Urban Green. 2021, 58, 126985. [CrossRef]
- Czajkowski, M.; Bartczak, A.; Giergiczny, M.; Navrud, S.; Żylicz, T. Providing preference-based support for forest ecosystem service management. For. Policy Econ. 2014, 39, 1–12. [CrossRef]
- 32. Bamwesigye, D.; Hlavackova, P.; Sujova, A.; Fialova, J.; Kupec, P. Willingness to Pay for Forest Existence Value and Sustainability. *Sustainability* **2020**, *12*, 891. [CrossRef]
- 33. Liu, W.-Y.; Lin, Y.-Z.; Hsieh, C.-M. Assessing the Ecological Value of an Urban Forest Park: A Case Study of Sinhua Forest Park in Taiwan. *Forests* **2021**, *12*, 806. [CrossRef]
- Mandziuk, A.; Fornal-Pieniak, B.; Ollik, M. Wartości nierynkowe lasów miejskich w zależności od ich wyglądu—Studium przypadku miasta Tarnowa. Sylwan 2021, 165, 165–175.
- 35. Mandziuk, A.; Fornal-Pieniak, B.; Stangierska, D.; Parzych, S.; Widera, K. Social Preferences of Young Adults Regarding Urban Forest Recreation Management in Warsaw, Poland. *Forests* **2021**, *12*, 1524. [CrossRef]
- Murphy, J.J.; Stevens, T.; Weatherhead, D. Is Cheap Talk Effective at Eliminating Hypothetical Bias in a Provision Point Mechanism? Environ. Resour. Econ. 2005, 30, 327–343. [CrossRef]
- Gołos, P.; Ukalska, J. Hipotetyczna gotowość fmansowania publicznych funkcji lasu i gospodarki leśnej. Sylwan 2016, 160, 597–608.
- Bateman, I.J. Household Willingness to Pay and Farmers' Willingness to Accept Compensation for Establishing a Recreational Woodland. J. Environ. Plan. Manag. 1996, 39, 21–44. [CrossRef]
- 39. Tyrväinen, L.; Väänänen, H. The economic value of urban forest amenities: An application of the contingent valuation method. *Landsc. Urban Plan.* **1998**, *43*, 105–118. [CrossRef]
- 40. Mandziuk, A.; Fornal-Pieniak, B.; Ollik, M. The willingness of inhabitants in medium-sized city and the city's surroundings settlements to pay for recreation in urban forests in Poland. *iForest Biogeosci. For.* **2021**, *14*, 483–489. [CrossRef]
- 41. Oviedo, M.; Drescher, M.; Dean, J. Urban greenspace access, uses, and values: A case study of user perceptions in metropolitan ravine parks. *Urban For. Urban Green.* **2022**, *70*, 127522. [CrossRef]
- 42. Kotchen, M.J.; Reiling, S.D. Environmental attitudes, motivations, and contingent valuation of nonuse values: A case study involving endangered species. *Ecol. Econ.* **2000**, *32*, 93–107. [CrossRef]
- Chen, B.; Qi, X. Protest response and contingent valuation of an urban forest park in Fuzhou City, China. Urban For. Urban Green. 2018, 29, 68–76. [CrossRef]

- 44. Nielsen, A.B.; Olsen, S.B.; Lundhede, T. An economic valuation of the recreational benefits associated with nature-based forest management practices. *Landsc. Urban Plan.* 2007, *80*, 63–71. [CrossRef]
- Skłodowski, J.; Gołos, P. Wartość rekreacyjnej funkcji lasu w świetle wyników ogólnopolskiego badania opinii społecznej. Sylwan 2016, 160, 759–766.
- Lorenzo, A.B.; Blanche, C.A.; Qi, Y. Guidry Assessing residents' willingness-to-pay to preserve the community urban forest: A small-city case study. *Arboric* 2000, 26, 319–325.
- Jim, C.Y.; Chen, W.Y. Perception and Attitude of Residents Toward Urban Green Spaces in Guangzhou (China). *Environ. Manage.* 2006, *38*, 338–349. [CrossRef]
- Jones, N.; Sophoulis, C.M.; Malesios, C. Economic valuation of coastal water quality and protest responses: A case study in Mitilini, Greece. J. Socio. Econ. 2008, 37, 2478–2491. [CrossRef]
- Dhakal, B.; Yao, R.T.; Turner, J.A.; Barnard, T. Recreational users' willingness to pay and preferences for changes in planted forest features. For. Policy Econ. 2012, 17, 34–44. [CrossRef]
- Bartczak, A. The role of social and environmental attitudes in non-market valuation. *For. Policy Econ.* 2015, *50*, 357–365. [CrossRef]
 Zydroń, A.; Szoszkiewicz, K.; Chwiałkowski, C. Valuing Protected Areas: Socioeconomic Determinants of the Willingness to Pay
- for the National Park. *Sustainability* 2021, *13*, 765. [CrossRef]
 52. Yu, X.; Abler, D. Incorporating zero and missing responses into CVM with open-ended bidding: Willingness to pay for blue skies
- in Beijing. Environ. Dev. Econ. 2010, 15, 535–556. [CrossRef]