Determinants of Willingness to Pay for an Urban Green Area: A Contingent Valuation Survey of College Students

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The aim of the study is to identify factors affecting young people's willingness to pay (WTP) for the conservation of an urban green area. A questionnaire survey, based on the Contingent Valuation method, was administered to a sample of students enrolled at the University of Molise (Italy). We examine the determinants of WTP for use and non-use values, visitors' profiles, socioeconomic characteristics and environmental attitudes. We detect factors affecting WTP decisions through logistic regression analysis. Variables affecting the WTP differ from the environmental values and according to the visiting experience; socio-economic characteristics do not appear particularly significant; the main cause for zero bids is related to the perception of the green area as a public good. Our results highlight a growing tendency, in young generations, towards a more sustainable awareness, which we believe should be carefully nurtured through adequate policy instruments, so to enhance the quality of urban life.

Keywords: environmental values, use value, non-use value, WTP, pro-environmental behaviour, university students, urban green area, sustainability, environmental management, logit

Introduction

Urban green spaces play different roles in cities, generating ecosystem services that tend to provide meaningful values for human well-being (Farley, 2012; Fisher, Bateman, & Turner 2011; Gómez-Baggethun & Barton, 2013). Such advantages have been widely recognized in international initiatives (Forest Research, 2010), in policy debates (TEEB, 2011), as well as in many studies that pointed out how crucial the aforesaid benefits are for both the health and environmental sustainability of cities (Tzoulas et al., 2007).

From a public policy perspective, measuring people's willingness to pay (WTP) for use and conservation of natural areas is considered as essential. Undoubtedly, this has financial implications. Given the severe shortage of public finances, many studies suggested to establish a fund (Merk et al., 2012) or to set admission fees to protect or manage the quality of the environment (Reynisdottir, Song, & Agrusa, 2008). To this purpose, the knowledge of WTP for environmental use and non-use values turns out to be vital to detect community's needs and to realize which policy interventions and strategies might be implemented to improve the management of green areas.

From an economic perspective, in Samuelson's two-types of goods approach, green spaces present the characteristics of public goods; i.e. non-excludable and non-rival in consumption. They generate positive externalities and represent a case of market failure, as private entities have no incentive to provide environmental services, and the benefits they create do not cover the necessary costs to either their production or maintenance; hence, public intervention appears as necessary.

Subsequent empirical and theoretical studies revealed that many environmental resources are not to be considered as pure public goods and, thus, introduced another concept of good, the common-pool, which is an intermediate type in the dichotomous classification, sharing the non-rivalry or non-subtractability to use attribute with private goods, and the not excludable nature with public goods (Ostrom & Ostrom, 1977). In this latter case, common property rights and regimes could be possibly more efficient than individual ones, given that some conditions are verified (McKean, 1998), and that trust (Ostrom, 2010) and other attributes solve the common social dilemma in a cooperative direction (Poteete, Jannsen, & Ostrom, 2010).

Concerning our specific purposes, the environmental economic literature distinguishes between use and non-use values and introduces several taxonomies and value categories (Davidson, 2013; Togridou, Hovardas, & Pantis, 2006). The Contingent Valuation method (CVM) is one of the most widely used in literature to elicit WTP for public natural resources and environmental services (Carson, 2012). Socioeconomic characteristics, such as age, gender, educational level and income, are among the most studied variables influencing pro-environmental behaviours. Further studies have refined the analyses by focusing on residence location (Han, Yang, & Wang, 2011) and congestion (Gürlük, 2013); on environmental attitudes (Gulev, 2012) and information sources (Han et al., 2011); on psychological motives and cognitive-affective determinants of satisfaction underlying CVM responses (Spash et al., 2009; López-Mosquera & Sánchez, 2014). In addition, some studies consider the use value, mainly recreational (Marzetti, Disegna, Villani, & Speranza, 2011; Jim & Chen, 2006), while others inves-

tigate non-use values for the conservation of a natural area (Baral, Stern, & Bhattarai, 2008).

Finally, with respect to the target population, many studies consider the residents' perspective (Ami et al., 2014; Ezebilo et al., 2013; Song, Cho, Lang, & Piao, 2013). The aim of this study is to analyse young people's WTP for an urban green area and its drivers, so to investigate the extent of their sustainable awareness. The study area was a Site of Community Importance (European Commission, 2014) located in the Molise Region, Italy. To this purpose, we set an empirical framework to detect significant determinants of both use and non-use values, with reference to socioeconomic characteristics, visitors' profile and environmental attitudes and behaviours. We approached use and non-use values separately; namely, recreational and educational values as well as existence and bequest values.

In order to add to the complexity of environmental values elicitation analyses and to develop an effective management strategy towards the use and conservation of natural areas, we focused our attention on the behaviour of young people for two main reasons: firstly because, if made particularly aware, they may almost certainly be capable of positively contributing to future environmental quality and sustainability. Indeed, they are in a particular stage of their lives in which they shape their personal identity and develop a system of values and beliefs, which are very likely to be used both in their current and in their adulthood lifestyle. Furthermore, as the core of future society, they are expected to be able to correctly influence policy makers and public choices, thus leading local urban planning towards a sustainable pattern.

Methodology and Data

The study area

The study area is the green suburban site of Monte Vairano, in the Molise Region, Italy, of approximately 700 hectares. It is a free access area with the characteristics of an urban park for the enjoyment and benefit of local community. Monte Vairano is located in the Molise Apennines (993 m above sea level). It was declared a Site of Community Importance (SCI) and inserted into the Natura 2000 European Network of protected areas, thanks to its biodiversity and the preservation of natural habitats and ecosystems. Most of the area (81.5%) is covered by deciduous oaks (CORINE Land Cover category 3112). It falls within three municipalities (Baranello, Busso, Campobasso). Campobasso is the main urban centre (population of 48,487 inhabitants at 1st January 2013; ISTAT 2014) of the Molise Region.

Thanks to its characteristics, the site is well suited for different uses, but the current state of conservation is inadequate, preventing local community

from making a more extensive use of it. Difficulties in realizing management projects are mainly due to both a shortage of public funds. Therefore, it appears as necessary to either impose an admission fee or to search for private sources of funding, in order to foster future potential benefits for such area.

Data Collection and Methodologies

This paper applies a Contingent Valuation Method to elicit the WTP for use and non-use values of the Monte Vairano area. The survey sample considers students regularly enrolled at the University of Molise at the date of 28th February 2014 and living in the closest municipalities surrounding Monte Vairano area (1,405 students). The University of Molise is the only academic institution located in the Region with 7,443 students attending the University (MIUR, 2014). Self-administered questionnaires were sent to institutional e-mail addresses of students in March 2014.

As it is well known, CVM is subject to a number of limitations affecting the validity and reliability of results. These include embedding, sequencing, information and elicitation effects, hypothetical and strategic biases, protest zero responses. Therefore, twenty students from different Departments of the University of Molise, not included in the final sample, were selected to pre-test the survey and to help clarifying its language form and defining its response bid options. They completed the questionnaire a second time, two weeks later, and results showed a high reliability coefficient (82%). The objectives of the survey were defined before entering the online compilation of the questionnaire. Respondents were provided with accurate information regarding the resources of the area before asking for the amount they would be willing to pay (Reynisdottir et al., 2008), thus making them fully aware of the market situation.

The questionnaire consisted of constructs measured on five-point Likert scales (ranging from 0 'None,' 1 'Low,' 2 'Fair,' 3 'High,' to 4 'Very high') and its structure was divided into three sections: knowledge and visit of the site; WTP and reasons for paying and not paying; socioeconomic characteristic (gender; age; education; residence; household size; location; department) and environmental behaviour (recycling, environmental association membership; visits to other natural areas in the past).

The first section investigated the knowledge of the site and collected information about the visit to appreciate how visiting students looked at the site and referred their impressions. The WTP section intended to present the market situation and ask for the value respondents gave to site characteristics. Respondents were surveyed about being willing to pay at least some amounts for two scenarios: i) examining WTP for use of the area; ii) eliciting WTP for non-use values. As regards the payment option used for

CVM, we followed a payment card system, offering different bids defined on the base of the pre-test questionnaire. Respondents were presented with a zero sum option and five ranges of monetary amounts (from 'Up to 50' to 'More than 250 Euros'); students were asked to tick the amount they would be willing to pay. In case of zero sum option, reasons for not being willing to pay were investigated. Respondents offering a positive monetary amount were also asked how much they would be willing to offer on a basis of four type of values (recreational; educational, bequest, existence); in case of zero amount, reasons were investigated.

The final section of the questionnaire collected information regarding respondents' socioeconomic characteristics and their environmental attitudes and behaviours. According to the objective and target of the paper, the independent variables selected to detect WTP motivations did not refer to a single specific approach. Firstly, as the sample focused on full-time university students, an income variable (typical of WTP economic analysis) was not considered. Yet, to get insights about dilemma concerns and conditional cooperation behaviours, considered in the framework of a public goods theory, respondents were asked who should bear the responsibility of paying. In line with the attitude-behaviour paradigm and the theory of planned behaviour, we considered the influence on WTP of environmental concern, of the attitude towards payment and of the behavioural control. Difficulties in paying were explored as well. Finally, the respondents' general environmental attitude and behaviour were taken into account.

A total of 242 valid questionnaires were considered (17.2% of the target population of students). Our sample size corresponded to a 95% confidence level and a 5.7% confidence interval. Hence, given the small size and number of inhabitants of the Molise Region, and the presence of only one University in the area, our paper targeted a sample of university students, representative of the study area.

Frequency distributions and descriptive statistics were analysed for the whole ($N = 242$) and the restricted sample of visitors ($N = 73$). Afterwards, logistic analyses were performed in order to identify the influence of visitors' and visit characteristics, as well as environmental and behavioural variables, on WTP for both use and non-use of the site scenarios, and on WTP for the different values attributed to the study area.

Results and Discussion

Respondents' Characteristics

The results of socioeconomic characteristics and environmental behaviour of the sample are summarised in Table 1.

Respondents are almost evenly divided between males (44%) and females (56%); most of them are aged between 19 and 23. The percentage

Table 1 Socioeconomic Characteristics of Respondents

Characteristic		Percentage
Gender	Female (1)	56.34
	Male (0)	43.66
Age	19–23 (1)	56.34
	24–29 (2)	38.73
	over 30 (3)	4.93
Residence	Campobasso municipality (1)	73.24
	Other municipalities (0)	26.76
Location area	Urban area (1)	61.97
	Suburban areas (0)	38.03
Department	Economics (1)	30.99
	Law (2)	6.34
	Agriculture studies (3)	9.86
	Biological sciences (4)	14.08
	Human Science (5)	16.20
	Medicine (6)	22.54
Environmental behaviour	Natural areas visit (0)	84.51
	Recycling (1)	59.86
	Environmental association membership (2)	5.63

Notes Coding of all the variables used in regression analysis is provided in brackets.

of respondents on total population decreases as age classes increase, which may be explained by younger students using and checking their institutional e-mail address more frequently than older students; about 50% of surveyed students are enrolled in undergraduate studies. The great majority of respondents came from Campobasso, the place where Monte Vairano is located, with most of them living in urban rather than suburban areas. Only 28.5% of respondents had paid jobs over the past year, though temporarily. As concerns environmental behaviours, results showed that the majority of surveyed students (59.9%) showed regular recycling habits, while 84.5% visited other natural areas in the past, thus underlying the existence of a particularly green attitude. Only few of them were members of environmental associations (5.6%).

Visit Characteristics

Table 2 presents the results of visit characteristics. The frequency distributions showed that more than 90% of respondents already knew about the existence of Monte Vairano site at the time of the survey, but only 76% of the sample knew its location. However, only 57% of those who were familiar with Monte Vairano had also visited the site and the visit frequency was quite low (45.9% once in the preceding year). Most respondents (57.3%)

Table 2   Visit Characteristics

Characteristic		Percentage
Knowledge	I know the area (1)	90.14
Visit	I have visited the area (1)	69.16
Distance	0–10 km (1)	57.53
	10–20 km (2)	35.62
	20–30 km (3)	6.85
Satisfaction level	Low (1)	20.55
	Fair (2)	64.39
	High (3)	12.33
	Very high (4)	4.11

Notes   Coding of all the variables used in regression analysis is provided in brackets.

Table 3   Willingness to Pay Bid Amounts

Amount (in Euros)	Non-use scenario (%)	Use scenario (%)
0	30.29	28.17
<50	52.11	47.89
51–100	7.04	17.61
>100	10.56	6.34
Total	100.00	100.00

lived at a distance ranging between 0 and 10 kilometres from the area. Concerning their visit experience, the majority of respondents (76%) opted for leisure activities. A considerable part of visitors reported a low-middle satisfaction level from the visit; moreover, 28% of them were averagely satisfied with the area, its characteristics and the related activities it was possible to engage in, while there.

Willingness to Pay for Scenarios and Environmental Values

The frequency distribution of WTP responses for use and non-use scenarios of the site are presented in Table 3. As we can see, around 68% and 71% of the respondents, respectively, were willing to pay an amount ranging from 50 to more than 100 Euros for each scenario. Most of them seemed willing to offer up to 50 Euros yearly in both cases. Finally, about 30% of respondents declared they would not pay anything at all.

Reasons for this unwillingness to pay, for both use and non-use scenarios, are reported in Table 4. The main cause for zero bids is related to the perception of natural areas as public goods: indeed almost 50% of respondents believed the protection of the site should be a public, and not a private, concern. Such result is in line with the work of Han et al. (2011), where the first reason for zero bid was that government should provide financial support to maintain a natural reserve. Around 30% of respondents

Table 4   Reasons for Not Being Willing to Pay

Reason	Non-use scenario (%)	Use scenario (%)
Public bodies should bear the cost	46.48	51.43
I can't afford to spend money in this period	32.39	30.00
I don't use the area	8.45	11.43
I need further information to decide	5.63	2.86
I am not interested in preserving the area	2.82	2.86
Other	2.82	0.00
I prefer using another area than this one	1.41	1.43
Total	100.00	100.00

Notes   Respondents were allowed to opt for more than one option.

Table 5   Level of Importance of Study Area for Each Value Category

Degree of importance	Recreational value (%)	Educational value (%)	Bequest value (%)	Existence value (%)
None (0)	2.0	2.0	0.0	0.0
Low (1)	6.0	14.0	17.8	0.0
Fair (2)	32.0	24.0	20.0	12.9
High (3)	34.0	40.0	40.0	19.4
Very high (4)	26.0	20.0	22.2	67.7
Total	100.0	100.0	100.0	100.0

Notes   Coding of all the variables used in regression analysis is provided in brackets.

declared not to be able to afford such expenditure at present time, and this implies that, despite temporary financial difficulties and lack of income source, most of them might be willing to pay a certain amount in the future. Almost 10% of the sample motivated their zero WTP bids by arguing their non-use of the site. Finally, only 3% of them stated not to be willing to pay as they were not particularly concerned with the conservation or use of the natural area.

Interestingly, the level of importance students gave to the site did not appear to be strongly related to their stated WTP, as it is shown in Table 5. As we can infer, respondents that would not pay for the use or non-use of the site seemed to be perfectly aware of its important environmental values. As a matter of fact, students who considered Monte Vairano as having a high level of importance, generally tended to recognize its usefulness for the existence value (68%).

Logistic Regression Analysis

Logistic regression analyses were performed for both the whole and the visitors' samples in order to explore significant influences of main independent variables on WTP. To this purpose, a binary-choice model was used; y

was the dichotomous dependent variable used, taking the value of 1 if a respondent was willing to pay and 0 if otherwise.

With respect to explanatory variables, coding was provided in the descriptive statistics tables. Moreover, we used dummy variables *work, sport,* and *education,* taking the value of 1 to indicate students engaged in a job, those willing to pay for sports activities, and the ones enrolled in undergraduate courses, respectively. The *environmental behaviour* variable takes the value of 0, 1 and 2, respectively, if i) students had visited natural areas in the past; ii) recycling activities were reported; iii) students reported memberships to environmental associations. Other independent variables were coded according to an ordinal scale (1 = low, 2 = fair, 3 = high, 4 = very high): i.e. the variable measuring the environmental concern about the level of protection that the area should receive even if costs borne by community increased *area protection,* and the variables indicating who should bear the responsibility for the conservation of the natural area, that is, *citizens), local authorities, central state* and *private sector,* respectively.

Logistic Regression for Use and Non-Use Scenarios: The Whole Sample

Table 6 presents the results of two models of Logistic regression related to the use and non-use scenarios of the area. Concerning the use scenario, socioeconomic and visit characteristics are not significantly determinant for the payment issue, a finding perfectly in line with those reported by Togridou et al. (2006) and Han et al. (2011). The (recreational value) variable shows a significant result, thus implying that the higher the level of importance of using the area for recreational activities, the lower the likelihood of being willing to pay for its use. Moreover, the *citizens* variable significance shows that respondents tended to be more willing to pay whenever they considered that citizens themselves should be concerned with the conservation of public natural areas. On the contrary, the higher the consideration that the private sector should be responsible, the lower the likelihood of respondents being willing to pay. These results about the respondents' perception of studied green areas as a public good are indicative and seem to share insight from the public goods theory (Liebe, Preisendorfer, & Meyerhoff, 2011). The results of Chi-square tests indicated that the overall estimated model was satisfactory at 10% significance level, as it was able to correctly predict 75.35% of respondents.

As regards the non-use scenario model, coefficients presented in Table 6 show that the higher the respondents' level of education, the higher their WTP. In addition, the significance of the *area protection* variable shows that the more respondents were concerned with area protection, despite increasing costs borne by community, the higher was their WTP, confirming the direct and positive effect of environmental concern on people's attitude

and WTP. Significant results emerged also for most of the value variables. As in the use-model, the higher the importance of recreational use, the lower the likelihood of being willing to pay not to use it. On the contrary, the higher the respondents' commitment to protect the area for the benefit of future generations, the higher the likelihood of their WTP (Marzetti et al., 2011). Hence, a considerable sense of responsibility towards intergenerational environmental benefit of the area emerged. Finally, in line with previous results, even for the non-use scenario, the sign and significance of the *citizens* variable show that the likelihood of WTP is higher whenever respondents argue that citizens themselves should be concerned with the issue of the conservation of public natural areas. The estimated model is satisfactory and correctly predicted 73.94% of respondents.

Logistic Regression for Use and Non-Use Scenarios: The Visitors' Sample

Table 7 reports the results of Logistic models applied to the visitors' subsample. In this case, as concerns the use scenario of the site, the *environmental behaviour* variable is significant and positive, as in the work of Han et al. (2011); therefore, the higher the respondents' commitment in environmental activities, the higher their likelihood of being willing to pay. Furthermore, the model shows a significant and positive coefficient for the *local authorities* variable. Consequently, respondents would be more than willing to pay to use the area when they consider that local public authorities should be concerned with its preservation and conservation. This is, again, indicative of the trend to consider the site as a public good. Despite such interesting results and the correct allocation of about 80% of respondents, the overall model does not seem to be completely satisfactory.

Far more different results emerged when considering the Logistic model of WTP for not using the area. Firstly, only some of the visitors' and visit characteristics provided interesting results. Indeed age and gender coefficients were not significant. WTP was found higher among respondents with higher levels of education (del-Saz Salazar & Rausell-Köster, 2008), even if the statistical significance was not high. Moreover, the *work* variable showed that the more respondents tended to be engaged in job activities, the higher their likelihood of being willing to pay, even if they did not use the area. Such result is indicative and in line with Tao, Yan, and Zhan (2007) and Adekunle, Momoh, & Agbaje (2008), as most visitors would be more than willing to pay for the conservation of the area, if endowed with an income source. The negative coefficient of *distance* and *recreational value* variables provided evidence, respectively, that the higher the distance separating respondents from the natural area, the lower their WTP for the non-use of the site, and that whenever respondents considered crucial to keep the site for recreational activities the WTP tended to be lower. Yet,

Table 6   Logistic regression results: Whole sample

	Use scenario				Non-use scenario			
	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)
Respondents' characteristics								
Gender	0.642		0.479	1.900	0.711		0.488	2.036
Age	–0.472		0.442	0.623	–0.063		0.410	0.938
Location	–0.320		0.540	0.725	–0.031		0.541	0.969
Education	0.177		0.482	1.193	0.824	*	0.496	2.280
Department	–0.157		0.120	0.854	–0.118		0.116	0.888
Work	0.807		0.608	0.184	0.359		0.601	1.431
Sport activities	–0.168		0.495	0.734	0.717		0.496	2.048
Visit characteristics								
Knowledge	1.259		0.853	3.524	0.883		0.772	2.420
Visit	–0.431		0.492	0.649	–0.395		0.485	0.673
Environmental concern and values								
Area protection	0.505		0.341	1.658	0.716	**	0.340	2.047
Recreational value	–0.562	*	0.319	0.569	–0.610	**	0.305	0.543
Educational value	–0.350		0.311	0.704	0.041		0.296	1.042
Bequest value	–0.178		0.379	0.836	0.838	**	0.368	2.312
Environmental behaviour and responsibility								
Env. behaviour	0.155		0.415	1.168	0.049		0.407	1.051
Natural areas visit	0.669		0.572	1.953	–0.116		0.600	0.890
Citizens	0.779	***	0.294	2.180	0.434	*	0.262	1.544
Local authorities	–0.216		0.397	0.804	–0.067		0.367	0.934
Central state	0.263		0.295	1.301	0.089		0.275	1.093
Private sector	–0.497	*	0.276	0.607	–0.059		0.264	0.941
Chi square	29.830				31.650			
p-value		*				**		
% correct predictions	75.35				73.94			

Notes   Column headings are as follows: (1) variable coefficients (β), (2) statistical significance at *1%, **5% and ***10% levels, (3) standard error of the estimated coefficients, (4) odd ratios (exp(β)).

the *environmental behaviour* variable appeared to be significant and positive. Thus the higher the respondents' environmental commitment and awareness, the higher their likelihood of being willing to pay for the non-use of the site. Consistently with use-values results, respondents would seem more than willing to pay not to use the area when considering *local authorities* as the main body responsible for the good keeping of the site. Concerning such finding, the visitors' subsample results are by far different from those of the whole sample, where the responsibility for the protection of the area was significantly assigned to the citizens. The over-

all model appears to be particularly satisfactory, as it predicted correctly 78.08% of respondents.

When comparing the results of the Logistic models used for the two scenarios, as well as for the whole and the visitors' sample, it emerges that it is not possible to explain WTP with common variables across all models. Such evidence holds even when relevant variables are compared between paired models, i.e., changing the scenario for the same sample or considering the two samples for the same scenario. In the visitors' sample, our evidence shows that respondents adopting environmental behaviours and perceiving the responsibility of local public authorities towards the protection of the area appeared more willing to pay both in the scenario in which the site is suitable for visits and in the one where visits would not be possible; in the whole sample this evidence did not emerge. The responsibility of citizens for the good-keeping of the green area is a common explanatory variable of the WTP for the whole sample in the two scenarios, but not for the visitor's sample. Finally, in all models, the recreational value of the site is negatively related to the WTP. This somehow surprising result is perfectly in line with our previous findings showing the great importance students gave to non-use values. In conclusion, the different findings emerged according to the importance of personal profile (residents vs. visitors) and scenarios, contribute to the issue of WTP sensitiveness to different exploratory variables (Liebe et al., 2011), thus suggesting accuracy in selecting independent variables and in drawing general conclusions about the main drivers of people's WTP for a green area.

Logistic Regressions of WTP for Environmental Values

In this subsection, we reported evidence of logistic regressions performed to explore, for the total respondents' sample, the influence of variables on willingness to pay for different values of the study area.

Specifically, WTP for recreational, educational and bequest values were modelled separately (Table 8). The results for existence value were not significant due to the very homogeneous data among the sample.

Concerning the *recreational value* model, its results show that the more the respondents tended to be engaged in job activities, the higher their likelihood of being willing to pay for using the area for sports activities. Such finding is indicative as respondents would be more than willing to contribute for the conservation and consequent recreational use of the area, if endowed with an income source.

With respect to the *educational value* model, a similar result was obtained concerning the *work* variable and with a much higher significance level. Moreover, the significance of the *area protection* variable shows that the more the respondents believed the natural area should be protected,

Table 7 Logistic Regression Results: Visitors' Sample

	Use scenario				Non-use scenario			
	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)
Visitors' characteristics								
Gender	–0.363		0.816	0.695	0.575		0.794	1.778
Age	–0.899		0.659	0.406	–0.894		0.740	0.408
Location	–0.315		0.783	0.729	0.852		0.805	2.344
Education	0.107		0.783	1.113	1.170		0.810	3.223
Department	–0.272		0.201	0.761	–0.252		0.208	0.776
Work	0.090		0.940	1.094	1.837	*	1.001	6.277
Sport activities	–0.400		0.777	0.669	–0.618		0.790	0.538
Visit characteristics								
Distance	1.047		0.690	0.350	–1.178	*	0.693	0.307
Satisfaction	–0.396		0.418	0.672	0.273		0.498	1.313
Environmental concern and values								
Area Protection	0.865		0.784	2.376	0.941		0.808	2.563
Recreational value	–1.686		1.175	0.185	–1.829	*	1.020	0.160
Educational value	–0.333		0.675	0.716	0.068		0.776	1.070
Bequest value	–0.427		0.792	0.652	0.186		0.810	1.205
Environmental behaviour and responsibility								
Env. Behaviour	1.534	**	0.721	4.641	1.737	**	0.812	5.681
Natural areas visit	0.056		1.385	1.058	–0.845		1.205	0.429
Citizens	–0.159		0.681	0.852	–0.346		0.696	0.706
Local authorities	2.364	*	1.470	10.637	3.680	**	1.699	39.668
Central state	–0.650		0.705	0.521	–0.017		0.681	0.982
Private sector	–1.185	*	0.677	0.305	–1.058		0.736	0.346
Chi square	24.890				30.460			
p-value	ns				***			
% correct predictions	79.45				78.08			

Notes Column headings are as follows: (1) variable coefficients (β), (2) statistical significance at * 1%, ** 5% and *** 10% levels, (3) standard error of the estimated coefficients, (4) odd ratios (exp(β)).

the higher their willingness to pay for the educational purposes offered by the natural site.

The last analysed model concerns the *bequest value*. In this model, some respondents' characteristics appear significant even if the sign of the coefficients is not always as expected. This is the case of age and education variables: the higher the age of respondents, the lower their WTP to keep the area and leave it to future generations. Similarly, WTP tends to significantly decrease when respondents reach higher levels of education. On the contrary, the *location* variable appears significant and positive, showing

Table 8 Logistic Regression Models of WTP for Environmental Values

Variable	(1)	(2)	(3)	(2)	(4)	(2)
Visitors' characteristics						
Gender	−0.029		−0.019		0.310	
Age	0.403		−0.235		−0.907	*
Location	0.067		0.728		1.199	**
Education	−0.351		−0.794		−1.432	**
Department	−0.054		0.036		0.143	
Work	1.067	*	1.785	***	1.044	
Sport activities	−0.427		−0.395		−1.026	
Visit characteristics						
Knowledge	0.829		0.351		−2.296	
Visit	0.393		−0.690		0.389	
Area Protection	0.411		0.491	*	0.708	*
Environmental behaviour and responsibility						
Environmental behaviour	−0.231		0.075		0.281	
Natural areas visit	−0.729		−0.315		−0.612	
Citizens	0.212		0.129		−0.069	
Local Authorities	0.257		0.313		1.044	***
Central State	−0.218		0.181		0.066	
Private sector	0.296		0.154		0.314	
Chi square	24.990		32.450		42.580	
p-value		*		***		***
% correct predictions	74.65		73.94		85.21	

Notes Column headings are as follows: (1) recreational value, (2) statistical significance at * 1%, ** 5% and *** 10% levels, (3) educational value, (4) bequest value.

that the more the respondents live next to the study area, the higher their likelihood of being willing to pay to preserve it for future generations. Thus, respondents who live close to Monte Vairano site reported a strong sense of belonging and responsibility. The positive and significant coefficient of the *area protection* variable indicated that the more the respondents believed the green area should be protected, the higher their WTP to preserve it and to let future generations benefit from it. When considering environmental responsibility variables, the *local authorities* variable showed to be positive and significant. Hence, respondents were more than willing to pay to preserve the area for future generations when they considered that local public authorities had to be concerned with its restoration and conservation.

In conclusion, all estimated models appeared highly satisfactory, but the best results were obtained in the *bequest* model. Respondents' WTP is mainly related to bequest value and not to preserve natural resources for educational purposes or recreational activities. This finding about the be-

quest value, together with the high importance given to the existence value of the site, support the study aim and confirm evidence about a higher environmental consciousness and commitment of younger generations (Kamri, 2013; Verbič & Slabe-Erker, 2009). Finally, when comparing logistic results for the different values attributed to the study area, some interesting conclusions could be drawn. Firstly, the *bequest model* is the most satisfactory. Secondly, different independent variables appear to be significant in explaining WTP for recreational and educational purposes, and for the bequest value. Indeed, the WTP models for recreational and educational uses share the importance of the *work* variable, confirming the relevance of an income source towards the willingness to pay. Moreover, such model clarifies the positive relationship between WTP, respondents' concern about the protection of the area and the responsibility of local public authorities. We can therefore conclude that different factors influence the WTP for each environmental value, though the specific elicited value should be accurately considered when selecting different exploratory variables (Shan, 2014) and drawing conclusions about factors influencing people's WTP for green areas.

Conclusions and Implications

This paper aimed at identifying the factors influencing willingness to pay for the use and non-use of the Monte Vairano urban green area, by means of the Contingent Valuation method. The knowledge of residents' WTP for environmental quality is crucial to detect community's needs and, as a consequence, to implement the most suitable policy interventions and management strategies.

Sustainability issues seem relevant in the case studied, both for the high concern of young people towards the protection of the green area and the importance of WTP for non-use environmental values. Our evidence shows that the main causes for zero bids are related to the perception of the urban green area as a public good. Consequently, the majority of respondents believed the good-keeping of the area should be a public, and not a private, concern. Moreover, both local public authorities and citizens are believed to be mainly responsible for the conservation of the site.

Such findings may offer interesting policy implications. First of all, the recognised importance of non-use values encourages a public intervention to preserve the environmental services of the green site and its benefit for a sustainable quality of urban life. Furthermore, many respondents seemed to agree on being possibly charged for either the use or the conservation of the site, which would suggest the adoption of specific interventions so to increase the frequency of visits and, consequently, the appreciation of the site. Our results thus highlight a growing tendency, in young generations, towards a more sustainable awareness, which we believe should be carefully

nurtured through adequate policy instruments, so to enhance the quality of urban life.

In conclusion, while these results are suggestive, it seems proper to draw some attention to possible limitations of the study. As a matter of fact, our paper mainly provides a local evidence about people enrolled in a regional University and living in locations surrounding the examined urban green area. Thus, generalizations concerning our results and conclusions should be drawn carefully. Nonetheless, further analyses may certainly deepen our findings. Indeed, it might be useful to perform more specific econometric studies on a larger or alternative sample of correspondents, as well as to focus on other natural sites and attractions, in order to take into consideration additional variables and characteristics and, in so doing, improve the understanding of willingness to pay towards environmental protection.

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