Contemporary understanding of human – built environment relations

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Abstract

In the paper we systematically review the impact that research of environmental stress, namely, poor housing and poor neighbourhood quality had on contemporary understanding of human – built environment relations. It is shown that substandard quality of the house, high noise, lack of natural light in the house, poorer physical quality of urban neighborhoods, living in a low-income neighborhood etc. are linked to elevated physiological and psychological stress. We believed that built environment relations are closely connected with the attitude to waste in the neighborhood. We focus on re-design our society so that all superfluous waste is eliminated and everything that is produced can be re-used, repaired, composted or recycled back into the system. In a growing number of regions, local groups of individuals, businesses and city officials are taking significant steps towards eliminating waste in our society. We confirmed the hypotheses that there is a strong sustainable interaction between psychological processes underlying human behaviour and built environment, and that during the sustainable build environment factors, the waste management expressed that interactions nightly. We believe that the positive effects of research could be reached only with sustainable interactions between psychological processes underlying human behaviour and built environment.

We believe that the results could help the local governments to contribute to reducing climate change, protect health, create green jobs, and promote local sustainability and of course, to help to increase the interests of potential buyers' expectations for buying decisions.

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1. Introduction

In the paper we systematically review the impact that research of environmental stress, namely, poor housing and poor neighbourhood quality had on contemporary understanding of human – built environment relations. Poor housing conditions can lead to pessimism, passivity, chronic stress and general discontent (Cohen et al. 2005). Due to the economic crisis, which is part of the economic cycle and is a phenomenon when economic activities increase or decrease, it is increasingly necessary to coordinate the interests of potential buyers' expectations for buying decisions. However, problems in the real estate market are not to be exclusively attributed to the global financial and economic crisis. In the case of the housing bubble, Shiller et al. (2010) note that the strong increase in real estate prices was especially caused by psychological expectations and financial instruments that allow speculation with real estate. It is shown that substandard quality of the house, high noise, lack of natural light in the house, poorer physical quality urban

neighborhoods, living in a low-income neighborhood etc. are linked to elevated physiological and psychological stress. If a purchase takes place and satisfies the buyer's needs, then it has fulfilled the buyer's expectations, and individuals' buying decisions result in their satisfaction, which becomes part of their experience. In this context, expectations can be understood as buyers' wishes or needs, or as their perception of what the supplier should offer (Lewis and Spyrakopoulos, 2001).

Through purchases, buyers look for products with features that best meet their needs, and there is a human value system behind this, that influences an individual's preferences towards certain products. People tend to decide to buy products that show their role and position in society. Although they belong to the same sub-cultural group, social class or profession, they may vary by lifestyle (Heijs et al. 2011). Build environment is close connected with living environment factors, where we observed proximity to public green areas, substandard quality of the houses, waste management, sustainable agriculture, architecture, build environment and proximity to health centers (Grum and Kobal Grum, 2015). We believed that built environment relations are closely connected with the attitude to waste in the neighborhood. In the case study: Zero waste City, Ljubljana, we focus on re-design our society so that all superfluous waste is eliminated and everything that is produced can be re-used, repaired, composted or recycled back into the system. In a growing number of regions, local groups of individuals, businesses and city officials are taking significant steps towards eliminating waste in our society. Zero Waste means strengthening the top three priority tasks in waste management - waste prevention/reduction, product reuse and material are recycling. Ljubljana is the first European capital to move towards Zero Waste.

We believe that the results could be reached only with sustainable interactions between psychological processes underlying human behaviour and built environment. Zero Waste is a critical stepping-stone to other necessary steps in the efforts to protect health, improve equity and reach sustainability. Zero Waste can be linked to sustainable agriculture, architecture, energy, industrial, economic and community development (Zero Waste International Alliance, 2015). We followed the hypotheses that there is a strong sustainable interactions between psychological processes underlying human behaviour and built environment, and that during the sustainable build environment factors, the waste management expressed that interactions nightly.

2. Background

Since market conditions changed over time, the buyers' behavior has become more complex, so they now differ in psychological and social needs and preferences. Research shows that people vary in their decision to buy a home in numerous factors (Grum and Kobal Grum, 2015). Grum and Kobal Grum (2015) in their study focus on the following ones: financial, physical, living environment and socioeconomic factors. The goal of their study was to verify the hypothetical model of psychological factors in the decision to buy real estate. It clarifies in integrated and relational way the role of psychological characteristics of real estate buyers in their expectations regarding the decision to buy which was established previously. Based on the analyses carried out the authors assume about setting up a hypothetical model of psychological factors in the decision to buy real estate, which in an integrated and relational way clarifies the role of psychological characteristics of real estate buyers in their expectations regarding the decision to purchase. As shown the living environment factors are those to which the psychological factors are most connected. The results point out four main psychological factors in the decision to buy real estate, which are: basic psychological needs, self-esteem, subjective emotional well-being and personal growth.

The model assumes that these same four psychological factors are those, which from a set of partial individual and social psychological factors integrate and connect psychological characteristics that connect potential buyers of real estate. All four factors significantly correlate with living environment factors. It also shows that psychological factors are entirely independent from financial and physical factors of real estate. It seems therefore, that when buying real estate the price, age, size, etc. are not as important as good infrastructure, quick access to everyday vital facilities, and other

positive qualities of the living environment inclusive proximity to public green areas, substandard quality of the houses, waste management, sustainable agriculture, architecture, build environment and proximity to health centers. We focus on re-design our society so that all superfluous waste is eliminated and everything that is produced can be re-used, repaired, composted or recycled back into the system. In a growing number of regions, local groups of individuals, businesses and city officials are taking significant steps towards eliminating waste in our society. We highlight the case study: Zero waste City, Ljubljana. Zero Waste means strengthening the top three priority tasks in waste management - waste prevention/reduction, product reuse and material are recycling. Ljubljana is the first European capital to move towards Zero Waste. We believe that the positive effects of research could be reached only with sustainable interactions between psychological processes underlying human behaviour and built environment. This could be achieved by addressing the three pillars of sustainability (Zero Waste International Alliance, 2015):

Environment: extending the usability of consumer goods through waste prevention and reuse and repair; improving waste sorting and recycling via technical innovations.

Society: engaging communities and businesses in resource efficient behaviours through social innovation; developing multi-stakeholder approach for increased collaboration and finding solutions how this collaboration will ensure a faster transition towards resource efficiency.

Economic: boosting green jobs in the waste sector.

In ten years, the quantity of recovered materials in Ljubljana increased from 16 kg per person in 2004 to 145 kg in 2014. By 2014, the average resident produced just 283 kg of waste, 61 % of which was recycled or composted (Zerowaste Europe, 2015). This means that the amount of waste being sent to landfill decreased by 59 % in ten years, and total waste generation decreased by 15 %. This reduction is even more remarkable when considering that Ljubljana already generated relatively low amount of waste for European standards, being its generation of 2014 a 41% less than the EU average (481kg per person) (Zerowaste Europe, 2015). At the same time, average monthly waste management costs for households had fallen, reaching 7.96 € in 2014. The costs for households in Ljubljana are among the lowest in Slovenia. The average yearly cost across the country is 150 €/hhd.year, compared to less than 100 € in Ljubljana.

The influence of level of development of living environment factors on health inequalities is widely known, but there is still poor understanding of the precise relationship between area-based conditions and neighborhood environmental quality. Fobil et al. (2010) showed wide variation in levels of association between the socioeconomic variables and environmental conditions, with strong evidence of a real difference in environmental quality across the five socioeconomic classes with respect to total waste generation, waste collection rate, sewer disposal rate, non-sewer disposal, the proportion of households using public toilets. Socioeconomic conditions connected with living environment are therefore important drivers of change in environmental quality and urban environmental interventions aimed at infectious disease prevention and control if they should be effective could benefit from simultaneous implementation with other social interventions.

3 Method

We used two types of measures, one was for measuring participants' expectations, and the second was for measuring their psychological characteristics. The main questionnaire for measuring real estate expectations is the questionnaire set up within the context of broader research (blank – self identifying citation). Of the three main types of questions (Keats 2000), open-ended, multiple-choice and rank ordering, the latter two types of questions were used. Using a five-point Likert scale, the participants assessed the importance of their personal and external expectations regarding the acquisition of real estate rights. 1,676 participants volunteered. There were 545 men and 725 women. Participants' age range was from 18 to 55 years, with an average of 21.15 years (SD = 4,6). As to education, most participants have secondary education (57.3%), which is followed by graduate degree education (38.1%). As to the number of children in a joint household, the most participants

are without children (45.6%). The most participants live in the city center (43.3%) or on the city outskirts (34.1%). The sample includes participants aged 18 to 55 who were selected according to cultural identity, gender, age, employment, marital or family status and economic social status.

General Need Satisfaction Scale (GNSS, Gagne 2003) was used to measure the level of satisfaction of three basic psychological needs in life. In the present study, reliability for autonomy was 0.69, 0.79 for relatedness and 0.61 for competence. Personal Growth Attitude Scale (Ryckman et al. 1996) consists of 15 items. In the present study, internal reliability was 0.87. Status motivation scale (Ryckman et al. 1990) consists of 26 items. In the present study, internal reliability was 0.77. Positive and Negative Affect Scale (PANAS; Watson et al. 1988) measures two dimensions: positive and negative effects. Positive affect refers to a state of good mood, enthusiasm and action, whereas negative affect refers to a state of depression, anxiety, distress and nervousness. In the present study, internal reliability was 0.79 for positive affect and 0.85 for negative effect. Self-esteem questionnaire (SLCS-R; Tafarodi and Swann 2001) measures two dimensions of the general self-esteem: self-liking and self-competence. Contingent Self-esteem Scale (Paradise and Kernis 2002) measures to what degree an individual's self-esteem depends on achieving standards, goals, and positive feedback. In the present study, internal reliability was 0.78.

4. Research findings and discussion

A set of questionnaire, which measures potential real estate buyers' personal expectations covers 30 variables. Eight factors explain over 71 percent of variance. Factors extracted by the factor analysis are partly covered by factors, which we have extracted from the questionnaire. With the first factor are highly saturated items, which according to the questionnaire fall within the scope of physical factors. With the second factor are highly saturated items that according to the questionnaire fall within the scope of living environment factors. With the third factor are highly saturated items that according to the questionnaire fall within the scope of socioeconomic factors. The factor analysis classifies the variables - maintenance costs and a sense of economic status - under physical factors, but the correlation in socioeconomic factors is similarly high, which is why we classify it with the set of latter factors. With the fourth factor are highly saturated items that according to the questionnaire fall within the scope of socioeconomic factors. With the fifth factor is highly saturated the item that according to the questionnaire falls within socioeconomic factors (maintenance costs), it is also highly reflected under physical factors as maintenance costs are linked to the physical condition of the real estate. With the sixth factor are highly saturated items that according to the questionnaire fall within the scope of physical factors. In the questionnaire, we classify the items under physical factors. With the seventh factor is highly saturated item, which falls within the scope of the general factors. With the eighth factor are highly saturated items that fall within financial factors. The Kaiser-Meyer-Olkin measure of sampling adequacy is 0.861. Bartlett's test (BT = 2654.756), which is statistically significant, also shows that extracted factors can be interpreted. The results are shown in Table 1.

By merging variables into four main factors: physical factors, living environment factors, socioeconomic factors and financial factors, we find that physical factors explain 79% of the variance, living environment factors 13%, socioeconomic factors 6%, while financial factors explain a total of only 1% variance. Factor analysis thus confirms the hypothesis according to which the principles related to the real estate itself were divided into four real estate factors. These are: (1) financial factors (interest rates, household income, credit availability, GDP), (2) physical factors related to physical characteristics of real estate (location, size of the apartment, presence of the balcony, natural lighting, peacefulness, age of the building and neighborhood, parking options, infrastructure of the apartment), (3) living environment factors (proximity to vital facilities, accessibility, substandard quality of the houses, waste management, agriculture, architecture, build environment) and (4) socioeconomic factors (maintenance costs, neighborly relations, sense of security, sense of social connection, sense of suitable economic status).

Table 2 shows the correlation between expectations to purchase real estate and psychological factors. These are correlations, which are according to participants, decisive to purchase real estate, namely among: financial, physical, socioeconomic and other factors, and living environment factors and basic motives and emotions and subjective well-being and self-esteem. The results show neither that physical and financial factors, which are decisive for the purchase, are not associated with psychological nor the motivational or emotional factors. Participants who expect that socioeconomic factors, such as maintenance costs, neighborly relations, sense of security, sense of social connection and sense of suitable economic status, highly contribute to their decision to buy a home, have only one psychological factor more expressed: personal growth. This correlation is low.

Variables	Factors							
	1	2	3	4	5	6	7	8
Location of the apartment	**0.814**	0.245	0.169	-0.019	0.067	-0.126	0.006	-0.005
Size of the apartment	**0.868**	0.123	0.096	0.024	0.045	-0.050	-0.031	0.090
Balcony / terrace	**0.845**	0.074	0.082	0.063	0.017	0.175	0.031	0.101
Brightness – natural lighting	**0.738**	0.208	0.207	0.048	0.131	0.221	-0.045	0.062
Open view	**0.737**	0.148	0.240	-0.047	0.295	0.127	-0.108	-0.040
Peaceful, not noisy apartment	**0.584**	0.233	0.434	0.001	0.162	0.218	-0.106	-0.030
Age of the building	**0.700**	0.195	0.121	-0.097	-0.100	0.222	0.241	-0.068
Age of the neighbourhood	**0.528**	0.255	0.183	-0.083	-0.036	0.343	0.310	0.144
Parking options	**0.614**	0.222	0.310	0.035	0.142	0.249	-0.158	-0.062
Internet access	**0.271**	0.378	0.003	0.103	0.059	0.751	0.075	-0.013
Central heating	**0.380**	0.245	0.232	0.110	-0.038	0.737	0.069	0.042
Proximity to public green area	0.215	**0.846**	0.090	0.035	-0.055	0.168	-0.030	0.078
Substandard quality of the house	0.371	**0.696**	0.206	0.158	-0.022	0.138	0.090	-0.075
Waste management	0.209	**0.857**	0.187	0.020	0.100	0.048	-0.003	0.009
Sustainable agriculture	0.298	**0.779**	0.154	0.013	-0.011	-0.006	0.126	0.013
Sustainable architecture	0.172	**0.838**	0.099	0.016	0.019	0.126	0.118	-0.012
Proximity to health centres	0.115	**0.844**	0.188	-0.069	0.143	0.151	-0.024	-0.067
Sustainable built environment	0.027	**0.792**	0.124	-0.074	0.023	0.096	-0.021	0.206
Maintenance costs	0.439	0.300	**0.363**	0.011	0.369	0.302	-0.148	0.008
Relationships with neighbours	0.282	0.261	**0.738**	0.026	0.095	0.117	0.130	0.004
Sense of security	0.367	0.243	**0.725**	0.157	0.006	0.177	-0.011	0.000
Social affiliation	0.256	0.327	**0.725**	-0.065	0.010	-0.096	0.152	0.098
A sense of economic status	0.590	0.309	**0.499**	0.027	0.014	0.104	0.178	-0.021
Other factors	0.050	0.031	-0.031	-0.038	0.406	0.014	**0.771**	0.145
When to buy property	-0.456	-0.195	0.196	-0.057	-0.157	0.065	0.212	**-0.311**
Social security	-0.072	0.149	0.104	**0.666**	0.237	0.215	-0.062	0.172
Suitable economic status	0.239	0.043	-0.103	**0.556**	0.176	-0.248	0.062	-0.396
Sense of independence	-0.090	-0.079	0.043	**0.781**	-0.155	0.041	0.004	-0.165
Sense of complacency	0.074	-0.029	-0.005	**0.833**	-0.206	0.025	-0.053	0.071
Main financial resources	-0.161	-0.060	0.010	0.136	-0.021	0.031	-0.003	**-0.742**

Table 1 Rotated factor matrix of score results of the factor scale

In contrast, the living environment factors, such as proximity to public transport, transport accessibility, proximity to kindergartens and schools, proximity to employment opportunities, shops, health centers, cultural centers, etc. are associated with both motivational and emotional factors. The participants who decide to purchase real estate mainly based on quality of living environment

factors, i.e. who value proximity to schools, shops, health services, access to the home, proximity to public transport and good transport facilities and other infrastructure, better meet their basic psychological needs in all three dimensions: autonomy, competence and connectedness. This means that they have a better sense of controlling tasks and accepting challenges, they see themselves more connected with people around them, and feel more independent and autonomous in taking important decisions.

	Financial	Physical	Living environment	Socioeconomic	Other factors	Social status	Independence	Self-contentment	Autonomy	Competence	Relatedness	Status motivation	Personal growth	Self-liking	Self-competence	Contingent self-esteem	Positive affect	Negative affect
Financial	1	.255**	0.112	0.142	0.014	-0.055	0.07	0.108	0.034	0.051	0.074	-0.083	0.008	-0.05	-0.052	-0.01	-0.034	-0.001
Physical	.255**	1	.280**	0.064	.260**	-0.052	0.038	0.068	0.036	0.131	0.127	0.080	-0.037	-0.135	0.014	0.046	0.111	0.133
Living environment	0.112	.280**	1	.399**	.425**	-0.054	-0.074	0.006	.230**	.264**	.324**	-0.139	.256**	0.125	.242**	0,000	.224**	-0.161
Socioeconomic	0.142	0.064	.399**	1	.235**	-0.059	-0.024	-0.009	0.132	0.165	0.146	0.035	.220*	0.13	0.138	0.03	0.128	-0.058
Other factors	0.014	.260**	.425**	.235**	1	0.022	-0.007	0.047	0.163	0.128	.316**	-0.125	0.063	0.115	0.148	-0.094	.245**	-0.037
Social status	-0.055	-0.052	-0.054	-0.059	0.022	1	.405**	.380**	-0.105	-0.023	-0.095	.228**	0.071	-0.039	-0.013	.224**	-0.029	-0.008
Independence	0.07	0.038	-0.074	-0.024	-0.007	.405**	1	.617**	-0.101	-0.057	-0.012	.227**	-0.03	-0.083	-0.007	.268**	0.004	0.060
Self-contentment	0.108	0.068	0.006	-0.009	0.047	.380**	.617**	1	-.202*	-0.079	-0.105	.205*	-0.073	-0.053	-0.09	.231**	-0.028	0.022
Autonomy	0.034	0.036	.230**	0.132	0.163	-0.105	-0.101	-.202*	1	.564**	.572**	-.296**	.222*	.536**	.452**	-.386**	.395**	-.590**
Competence	0.051	0.131	.264**	0.165	0.128	-0.023	-0.057	-0.079	.564**	1	.490**	-.298**	.261**	.563**	.599**	-.399**	.469**	-.522**
Relatedness	0.074	0.127	.324**	0.146	.316**	-0.095	-0.012	-0.105	.572**	.490**	1	-.339**	.213*	.408**	.431**	-.294**	.472**	-.467**
Status motivation	-0.083	0.08	-0.139	0.035	-0.125	.228**	.227**	.205*	-.296**	-.298**	-.339**	1	0.082	-.350**	-.339**	.583**	-0.092	.421**
Personal grow	0.008	-0.037	.256**	.220*	0.063	0.071	-0.03	-0.073	.222*	.261**	.213*	0.082	1	.222**	0.136	-.173*	.415**	-.270**
Self-liking	-0.05	-0.135	0.125	0.13	0.115	-0.039	-0.083	-0.053	.536**	.563**	.408**	-.350**	.222**	1	.702**	-.552**	.424**	-.634**
Self-competence	-0.052	0.014	.242**	0.138	0.148	-0.013	-0.007	-0.09	.452**	.599**	.431**	-.339**	0.136	.702**	1	-.414**	.388**	-.498**
Contingent self	-0.01	0.046	0	0.03	-0.094	.224**	.268**	.231**	-.386**	-.399**	-.294**	.583**	-.173*	-.552**	-.414**	1	-.234**	.514**
Positive affect	-0.034	0.111	.224**	0.128	.245**	-0.029	0.004	-0.028	.395**	.469**	.472**	-0.092	.415**	.424**	.388**	-.234**	1	-.246**
Negative affect	-0.001	0.133	-0.161	-0.058	-0.037	-0.008	0.060	0.022	-.590**	-.522**	-.467**	.421**	-.270**	-.634**	-.498**	.514**	-.246**	1

Table 2 Correlations between expectations of potential real estate buyers and their motivational and emotional characteristics

Impact of living environment factors on psychological well-being of potential home buyers are shown below. The main hypothesis that in the decision to buy real estate there are two groups of factors: factors related to real estate - real estate factors, and factors related to persons deciding to buy real estate - psychological factors, were confirmed in the survey. With the potential decision to buy real estate are associated both real estate factors and psychological factors. Further analysis of this hypothesis showed that not all real estate factors are associated with all psychological factors, but that these connections are completely defined. Thus, it can be concluded that the main hypothesis in further analysis is partially confirmed, namely: that in the decision to buy real estate there are two groups of factors, certain real estate factors and certain psychological factors. These results are consistent with the results of the study by Morita et al. (2010), who conclude that the decision to buy real estate is associated with the level of social support and a sense of trust in those around oneself. They also refer to studies, which examine the role of locus of control (Wang et al. 2008), wherein the importance of the internal point of control and a sense of autonomy and independence is a major factor in deciding to buy real estate.

Interestingly, these factors well discriminate also psychological characteristic of the personal rivalry. According to the results, to the participants who believe that living environment factors are the most decisive factors when buying their own property, the purchase of their own real estate would also represent the feeling of personal progress and personal growth. The results also showed that those with higher demands in their own living environment factors have also higher self-esteem.

This finding is confirmed as well by the results of the study by Pinto et al. (2004), who highlight the importance of stable and high self-esteem also in the decisions to buy real estate. And they also have higher subjective emotional well-being, which is also confirmed by the results of the study by Avnet et al. (2012). Hereon, it can be concluded, that to be satisfied with real estate or with living factors, in which a potential real estate is involved, high or optimally subjective emotional well-being is needed. At the same time, the collected results can be compared with the results of the examination of a relatively new phenomenon in the field of psychological factors when deciding about real estate, namely attachments or attachment to the real estate (Khozaei et al. 2012). Attachment, which in psychology is a known and quite researched phenomenon, is acquiring a new dimension through research of the users' attitude toward real estate. It seems that people, who feel it is important in what infrastructural environment they live or they would like to live, express constructive attachment to real estate also through higher subjective emotional well-being (Florek 2011).

From the real estate point of view the above stated relates to findings by Luttik (2000), who listed as the most important influences on the price and the attractiveness of real estate the characteristic and attractiveness of environment, open view, peaceful environment and good infrastructure. Anderson and Cordell (1988) in their research, like Morancho (2003) conclude that the proximity to educational institutions is essential. Similarly also note Munizzo and Virruso Musial (2009), who mention as more important factors public transport accessibility, proximity to schools and important institutions (shops, cultural centers).

Rohe et al. (2001) studied social advantages of apartment owners and established that apartment owners compared to apartment tenants express higher satisfaction with their living environment, are socially more active in their living environment, change residence less often and more frequently contribute to the social stability of the neighborhood. They note that the satisfaction level among apartment owners is higher. In the Baltimore case, apartment buyers and apartment tenants were observed and after a year and a half, it was concluded that the satisfaction of apartment buyers was higher than the satisfaction of tenants (Rohe and Stegman 1994). In a further three-year study, Rohe and Basalo (1997) determined that even after a three-year ownership the owners of apartments were still more self-satisfied as the tenants. They defined this self-satisfaction as the combination of the general satisfaction with life, apartment and neighborhood. Kleinhans and Elsinga (2010) conclude that there is a strong correlation between owning a home and the feeling of independence and self-satisfaction.

Based on the analyses carried out we can assume about setting up a hypothetical model of psychological factors in the decision to buy real estate, which in an integrated and relational way clarifies the role of psychological characteristics of real estate buyers in their expectations regarding the decision to purchase. Precisely the living environment factors are those to which the psychological factors are most connected. Model 4 points out four main psychological factors in the decision to buy real estate, which are: basic psychological needs, self-esteem, subjective emotional well-being and personal growth. The model assumes that these same four psychological factors are those, which from a set of partial individual and social psychological factors integrate and connect psychological characteristics that connect potential buyers of real estate. All four factors significantly correlate with living environment factors: basic psychological needs ($r = 0.324$), self-esteem ($r = 0.242$), subjective emotional well-being ($r = 0.224$) and personal growth ($r = 0.256$). It also shows that psychological factors are entirely independent from financial and physical factors of real estate. It seems therefore, that when buying real estate the price, age, size, etc. are not as important as good infrastructure, quick access to everyday vital facilities, and other positive qualities of the living environment. With this decision are associated fulfilled basic psychological needs, stable self-esteem, subjective emotional well-being and sense of personal growth.

It therefore appears that what potential buyers focus most on when buying real estate can be divided into two parts. In the first phase, the greatest influence on potential buyers have physical

factors of real estate (79% variance), wherein in the second phase, the decision to buy is influenced by or/in largest part subjective well-being, self-esteem and feeling of personal growth is contributed from living environment factors. Together with the physical factors, they explain 92% of variation. This is confirmed also by the survey, where results show that the biggest influence on the price of housing have the factors, which are linked to the neighborhood (relations, origin, safety, tidiness, infrastructure, equipment) followed by location, financial and physical characteristics (Bourassa at al. 2003).

The results show how important influence have living environment factors (proximity to vital facilities, accessibility, substandard quality of the houses, waste management, agriculture, architecture, build environment). By merging variables (Table 1) the results show that between living environment factors is expressed as most pronounced factor – waste management. According to the Zero Waste International Alliance (www.zwia.org), Zero Waste is a goal that is ethical, economical, efficient and visionary, to guide people in changing their lifestyles and practices to emulate sustainable natural cycles, where all discarded materials are designed to become resources for others to use. Our results confirm the model of interactions between psychological and living environment factors in the decision to buy real estate. According to GURS (2016) in Ljubljana last year recorded sales of about 2700 dwellings in multi-dwelling buildings and 10 percent more than in 2014, when their turnover compared to 2013 increased by about 30 percent. Markedly also increased the number of executed real estate transactions, implying a marked revival of the real estate market. The results suggests that good living environment conditions and among them good waste management expressed positive interactions between psychological and living environment factors and lead to the decision to buy real estate. Case in Ljubljana suggests that project Zero Waste City born results in this direction: the satisfaction of the population is increasing, supply of real estate is rising, and house prices are growing. If a purchase takes place and satisfies the buyer's needs, then it has fulfilled the buyer's expectations, and individuals' buying decisions result in their satisfaction, which becomes part of their experience.

4. Conclusions

In the article, we investigated sustainable interactions between psychological processes underlying human behaviour and built environment: Case of Ljubljana - zero waste city. The main instruments for measuring the participants' expectations are questionnaires that we formed ourselves. A total of 1,676 participants took part in the survey. According to the results, we divide real estate factors into financial factors, physical factors related to physical characteristics of real estate, living environment factors and socioeconomic factors. Principles based on users' perceptions were measured by psychological scales, which have been tested in the existing, previously published studies. According to this measured, we divided psychological characteristics into motivational and emotional characteristics. On this basis, we used a created model (Grum and Kobal Grum, 2015) where we assumed a hypothetical link between expectations of potential home buyers and their motivational and emotional characteristics.

The research showed that financial and physical factors are independent from psychological ones. Expectations about price of apartment or house, location, size of apartment, natural lighting etc. are not correlated neither with motivational nor emotional factors, but they form independent areas that are related with the real estate only. It seems that affordable price and good physical condition of real estate are the most important for buyers. It could be recommended to enhance the financial politics to stimulate potential buyers to purchase a home. Living environment and socioeconomic factors both correlate with personal growth, which means that participants who value most the following characteristics of real estate: proximity to vital facilities, substandard quality of the houses, waste management, sustainable agriculture, architecture, build environment, good neighborly relations, feelings of safety, social belonging to the neighborhood etc. have higher motives of cooperation, self-improvement and self-growth than those with lower living environment

and socioeconomic factors. It could be concluded that home owners would be more satisfied and integrated in living environment. The results could help the local governments to contribute to reducing climate change, protect health, create green jobs, and promote local sustainability. The results are shown that the waste management (for example Zero Waste Project) is a critical stepping-stone to other necessary steps in the efforts to protect health, improve equity and reach sustainability. Zero Waste can be linked to sustainable agriculture, architecture, energy, industrial, economic and community development (Zero Waste International Alliance, 2015). We confirmed the hypotheses that there is a strong sustainable interaction between psychological processes underlying human behaviour and built environment, and that during the sustainable build environment factors, the waste management expressed that interactions nightly.

It is interesting, therefore, that the environment factors with respect to real estate factors are associated only with socioeconomic and physical factors, but not with financial factors. Of all the real estate factors, the mostly associated with psychological factors is the environment factor, which means that with the development of positive environment factors we can increase the well-being or the sense of personal satisfaction with oneself. We note, however, that the finance is too much of an independent factor to be directly connected to psychological factors. But anyway, we believe that the results could be reached only with sustainable interactions between psychological processes underlying human behaviour and built environment.

The results suggests that good living environment conditions and among them good waste management expressed positive interactions between psychological and living environment factors and lead to the decision to buy real estate. Case in Ljubljana suggests that project Zero Waste City born results in this direction: the satisfaction of the population is increasing, supply of real estate is rising, and house prices are growing. If a purchase takes place and satisfies the buyer's needs, then it has fulfilled the buyer's expectations, and individuals' buying decisions result in their satisfaction, which becomes part of their experience.

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