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Correlation between the perceived residential environment quality and the inhabitants' quality of life and civic behavior

Abstract:

Although it has been assumed for many years that there is a relationship between the subjectively perceived quality of residential environment and quality of life, empirical evidence for the existence of such a link has been inconclusive. It is also assumed that the perception of residential environment in a certain way covariates with the behavior of people in this environment; Empirical support for this correlation is now all the more problematic. The objectives in the our research project were as follows: (1) enriching the current knowledge about those links between the perceived quality of various residential areas and their inhabitants' experienced quality of life , and (2) examining the co-variables between the sense of satisfaction with the residence and declared pro-social and civic behavior. For the purpose of our study, we proposed an original theoretical framework integrating several available man-environment-behavior relationship concepts with the more general *homeodynamic regulation* concept for achieving psychological balance. Sixty-two people aged 18 to 85 took part in the research. Two groups were identified in the analysis: young adults and seniors. No significant correlation was found between the respondents' perceived quality of life and their satisfaction with the quality of the environment they inhabited. It was almost exclusively seniors who undertook activities to benefit the residential area, and their life quality was correlated with this activity. Young adults turned out to be generally inactive. Correlations between pro-social and civic behavior and the residential area's assessed quality proved to be weak and simple, but had different directions and dimensions in young adults and seniors.

Keywords

environmental psychology; perceived residential environment quality; quality of urban life; environment and behavior; pro-social behavior; civic behavior; senior citizens

Streszczenie:

Mimo, że od wielu lat przyjmuje się założenie o istnieniu związku subiektywnie spostrzeganej jakości środowiska zamieszkania z jakością życia, empiryczne wsparcie istnienia takiej relacji było dotychczas niejednoznaczne. Zakłada się też, że spostrzeganie zamieszkiwanego środowiska w określony

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sposób jest współzmienne z zachowaniami ludzi w tym środowisku; empiryczne wsparcie tej korelacji jest dziś tym bardziej problematyczne. Celami omówionego w tym artykule projektu badawczego były: (1) wzbogacenie dotychczasowego stanu wiedzy na temat wspomnianych wyżej związków pomiędzy spostrzeganą przez ludzi jakością różnych aspektów ich środowisk zamieszkania a doświadczaną przez nich jakością życia oraz (2) zbadanie współzmienności pomiędzy poczuciem satysfakcji z miejsca zamieszkania a deklarowanymi zachowaniami prospołecznymi i obywatelskimi w tym miejscu. Zaproponowaliśmy tu autorską ramę teoretyczną integrującą kilka istniejących wcześniej koncepcji relacji człowiek-środowisko-zachowanie z ogólniejszą koncepcją homeodynamic regulation w osiąganiu równowagi psychologicznej. W badaniach wzięły udział 62 osoby w wieku od 18 do 85 lat. Wyodrębniliśmy w analizach dwie grupy: młodych dorosłych oraz seniorów. Okazało się, że poczucie jakości życia badanych w zasadzie nie miało związku z ich satysfakcją z jakości zamieszkiwanego środowiska. Aktywność na rzecz miejsca zamieszkania podejmowali niemal wyłącznie seniorzy, i była z tą aktywnością współzmienna jakość ich życia. Młodzi dorośli okazali się generalnie nieaktywni. Zależności pomiędzy zachowaniami prospołecznymi i obywatelskimi a oceną jakości środowiska okazały się słabe i prostoliniowe, aczkolwiek miały inne kierunki i wymiary u młodych dorosłych i u seniorów.

Słowa kluczowe

psychologia środowiskowa; spostrzegana jakość środowiska zamieszkania; środowisko i zachowanie; zachowania pro-środowiskowe; zachowania obywatelskie; seniorzy

Introdution

Although it may sound obvious today, the quality of the physical environment is important for people's mental functioning. As various theoretical concepts and studies indicate, for example, a particularly important factor conditioning the quality of life is the living environment (e.g. Bonnes, Scopelliti, Fornara, & Carrus, 2012; Dębek & Janda-Dębek, 2013; Diener, Lucas, & Oishi, 2002; García Mira, Uzzel, Real, & Romay, 2005; Keles, 2012; Perlaviciute & Steg, 2012). Many existing studies emphasize the relationships between the overall environmental quality and quality of life (cf. Dębek & Janda-Dębek, 2013). Although studies on the quality of life, experienced satisfaction levels and adaptation to the environment are very important, they relate to evaluation and states rather than human behavior. These may, but need not, be correlated with certain human experiences. For environmental psychologists, on the other hand, people's behaviors in relation to certain environmental characteristics they experience are the primary focus in the research.

It is also commonly known that the perceived environment covariates with their inhabitants' behavior either to benefit the environment, or be against it. This is primarily about environmental ecological and defensive activity or aesthetic improvement related to the social capital and so on (e.g. Lewicka & Bańka, 2011) as well as to pathological, antisocial devastation and destruction (e.g. Gifford, 2007). The relationship (usually in-

direct) between the perceived environmental features and mental states or certain human behavior resulting from these observations is quite evident in modern studies (Bell, Greene, Fisher, & Baum, 2004; Dębek, 2014; Gifford, 2007; Marans & Stimson, 2011). However, no conclusive test results were found in the subject literature that would be based on essential human mental states, and certain behavior resulting from them.

The aim of our research project was to enrich the available knowledge of the links between the various perceived qualities of the residence and the quality of life people experience there. The second, and more important goal for us, was to examine the covariableness between the sensed satisfaction from the residence and the declared pro-social and civic behavior of the respondents living there. Eventually, we included two different age groups in the research design: young adults and seniors. These two age groups were chosen primarily because there had been no conclusive reports about the diversity in life quality and differences in perception of the environmental quality by these two groups (e.g. Czapiński & Błędowski, 2014). The second reason was the inclusion of the life cycle stage in Gifford's framework for (2007) investigating human–environment systems (discussed later in this article) as a significant subjective factor conditioning these relationships.

For consideration and hypotheses about these correlations, especially concerning assessment of environmental quality and pro-social and civic behavior, we set forth an original theoretical approach, integrating the eclectic human relations model with the surrounding environment by Bell, Greene, Fisher, & Baum (2004), research model of residential satisfaction, behavior and well-being by Gifford (2007), model of the relationship between environmental domain satisfactions and life satisfaction and behaviors by Campbell, Converse, & Rodgers (1976), and Person-Environment Integrative-Transactional Framework by Dębek (2014). We also assumed that people are generally motivated to act pro-environmentally and demonstrate a desire to achieve psychological balance, which is impaired both in very weak, and very good fits to their areas of residence.

Theoretical and conceptual framework

Associating people's pro-social and civic behavior with physical characteristics of their places of residence is common, but rarely theoretically grounded in fundamental psychological mechanisms. The above-mentioned people-residence relations models (Bell et al., 2004; Campbell et al., 1976; Dębek, 2014; Gifford, 2007) are four of many theoretical conceptualizations. They are, in our opinion, the most relevant in the discussed research. Each model emphasizes links between environmental perception by people and their behavior towards the environment, either modifying it or acting against

it. These concepts also show that environmental perception covariates with specific psychophysiological and psychological states, such as a sense of satisfaction, relaxation, stimulation, overload, reactance and ultimately attitudes towards the environment.

One of the first models dealing with the problem described above was offered by Campbell et al. (1976). This model focused on the link between multiple domains of human life (i.e. broadly defined aspects of family life, health, and residence) with overall life satisfaction. This satisfaction, in turn, was both directly and indirectly associated with various human behavior (i.e. coping, adaptation). Campbell et al. (1976) sought to demonstrate a sequential cause and effect relationship link between the objective attributes of the environment, its subjective perception, evaluation, satisfaction, and ultimately behavior. There, human behavior resulted from satisfaction with various domains of life (including the residential area), satisfaction with life in general, and individual personal traits. Campbell et al. (1976) did not assume the existence of feedback between behavior and objective environmental features; such an assumption seems obvious today, (Stokols, 2013) evident, among others, in the three theoretical concepts discussed below. What makes this concept particularly valuable from our viewpoint, is the inclusion of quality of life as the result of the environmental perception and, at the same time, the reason for certain behavioral forms.

Bell et al. (2004) showed another aspect. In their framework, in many places analogous with the proposal by Cambpell et al. (1976), they hypothesized about certain behavioral causes and consequences. They claimed that perception of the environment can lead an individual to two basic conditions: person-environment fit or lack thereof (i.e. perception that the environment meets user needs or otherwise (Bell et al. 2004 p. 421). According to the authors, satisfaction is the ultimate mental state for a fit. The authors assumed that the absence of person-environment fit is followed by agitation, stress, overload or reactance, and consequently either adaptation (or adapting to the environment), or persistent arousal and stress (intensifying), thus leading to vandalism, social withdrawal and fragmented responsibility. While the behavior mechanism in the lack of human-environment fit was detailed in Bell et al. (2004), the analysis of behavior mechanisms resulting from a good fit and satisfaction with the relationship with the environment has been inconclusive.

Gifford (2007) in one chapter of his flagship environmental psychology textbook, included a small but interesting diagram presenting the relationship between urban design, physical environment being its result, people inhabiting it, observations people make concerning this environment, and eventually their behavior – *model for urban environmental psychology.* In this model, as well as in the aforementioned conceptualization *of residential satisfaction, behavior and well-being,* Gifford (2007, p. 260,287) assumed that human behavior, such as pro- or anti-social behavior, vandalism, taking

care of the environment or restoring it, is correlated with the impression of the living environment (considering it threatening, satisfactory, etc.) and dependent on the specific characteristics of people inhabiting it (e.g. life cycle stage, residence length, economic status etc.). However, in the above schemes Gifford (2007) did not outline the character of this dependence, and instead offered a general framework for a part of relevant studies dealing with human behavior in urban environments. Gifford's model (2007) was particularly important to us thematically as it specifically concerned urbanized spaces, and contained theoretically relevant variables similar to various pro-social and civic behavioral forms in the place of residence being our own research focus.

Dębek's framework (2014) offered a similar outline. However, rather than forming hypotheses on the directions of the environment-person-behavior interdependencies, it adopted the doctrine of reciprocal determinism set forth by Bandura (1978), aptly presented also by Kihlstrom (2014). From this article's perspective, it is important that Dębek (2014) tried to show as many interrelated, specific aspects of environments (e.g. symbolism, functionality, environmental consistency, form, social elements, etc.), as characteristics of people (demographic, psychological, cultural) and their possible, specific mental states (person-environment fit, sense of place, attachment to the place, etc.) and behavior (approach, avoidance, performing, transforming, etc.).

To conclude, we combined these four proposals to conceptualize the person-environment relationship (P-ER) in a theoretical framework to study the relationship between people and their environments. In particular, we wanted to discover theoretical causes and mechanisms of certain behavior by people in their residences, while maintaining the wealth of hypotheses about the P-ER formulated to date by other authors. The authors' attempt to integrate the above-discussed concept is shown in Figure 1.

We assumed, in line with authors like Wapner, Demick, Yamamoto, & Minami (2013), that a particular man-environment relationship is part of a larger socio-physical environment system in its totality, and that the system is in dynamic equilibrium. We proposed an additional fundamental assumption on the primary motivational mechanism which consisted in pursuing psychological equilibrium by the person living in the system. Psychological equilibrium, in our opinion, is a theoretical, static—thus impossible to achieve—infinitely short condition in which the body does not have to expend any energy through action (i.e. a condition lacking any needs, desires, aspirations, regret or anticipation). This is in the center of the theoretical continuum comparable to homeostasis (Cannon, 1963) or, more precisely, *homeodynamic regulation,* (Berntson & Cacioppo, 2007) with psychological satisfaction on one end, and no satisfaction on the other.

When the environment, for example a residence, is particularly ill-suited to a person (i.e. it fails to meet the conscious or unconscious needs and desires), the individual

suffers from a lack of psychological satisfaction. This lack is manifested by arousal, stress, overload and other similar conditions. Psychological balance is disturbed, and the individual becomes motivated to deal with changes in the environment, or to adapt themselves to the environment.

However, if the environment fits a person well (i.e. it meets the person's needs), the person feels psychological satisfaction. This condition manifests itself in a lack of arousal, in feeling satisfied and being relaxed. It should be noted, however, that neither state is perpetually sustainable, and energy is spent in both cases.

Considering the dynamics of human needs and environment volatility, the satisfaction-fit (as well as dissatisfaction-no fit) state can be either permanent or impermanent; Psychological balance is impaired in both cases. In the first one, an individual is motivated to introduce a change or perform an adaptation leading (at least) to the point of equilibrium (i.e. no need for further energy expenditure). In the other case an individual is motivated to maintain the positive state; at least enough so as not to exceed the equilibrium point toward dissatisfaction (which again would be need energy expenditure). The motivation to maintain psychological equilibrium may be caused by a human tendency to continually anticipate one's future emotions (Schwartz, 2013); for example, how will I feel if the environment for any reason fails to satisfy me as much as it does at the moment? As argued by Doliński and Łukaszewski (2000) human motivation manifests itself not only in the will to equalize, but also as a way to prevent the interference of, homeostatically maintained equilibrium.

Existence in extremes, that is, either in complete satisfaction or complete dissatisfaction, is energetically inefficient, because both states generate tensions associated with remoteness from the theoretical, "initial" state, the equilibrium. The energy cost results from the fact that increasing the distance from the equilibrium leads to, in accordance with motivation theories known today (Franken, 2002), the state of desire for something (e.g. satisfaction), or a desire to avoid something (e.g. grief, loss). In accordance with the least effort principle (Allport, 1954) the human mind seeks to optimize energy expenditure. If an organism can make a choice regarding energy expenditure, it—more or less consciously—will choose a solution which absorbs as little energy as possible, allowing it to stay possibly closest to the point of equilibrium.

Considering the above assumptions we have decided to check if and how the degree of man-environment fit (satisfaction) will be correlated with specific pro-social and civic behaviors (energy expenditure).

Indicators of person-environment fit (and therefore psychological satisfaction or dissatisfaction in the environment) may include: assessment of the environment expressed in questionnaires, statements concerning the past and future behavior in this en-

vironment, actual behavior of people or the accompanying physiological and emotional reactions like arousal, irritability, resentment, disgust, pain, boredom, calm, wonder, and awe. In the model proposed by Campbell et al. (1976) the declared sense of an individual's life quality may be a person-environment fit indicator. In this project the person-environment fit was indicated by: respondents' answers to the Perceived Residential Quality & Neighbourhood Attachment (Fornara, Bonaiuto, & Bonnes, 2010) questionnaire, adapted to Polish by Dębek and Janda-Dębek (2015), answers to the Polish language version of the international life quality questionnaire of the World Health Organization (2004), and also responses to the original Questionnaire of Activity in the Place of Residence created for our project (discussed in Appendix A).

Hypotheses

In the subject literature, relationship between the quality of residential environment (QoRE) and quality of life (QoL) were indicated repeatedly (e.g. Dębek & Janda-Dębek, 2013; van Kamp, Leidelmeijer, Marsman, & Hollander, 2003). These relations were generally considered to be linear, monotonic and positive. A detailed review of the results on the relations (Dębek & Janda-Dębek, 2013) indicated, however, that the empirical linear patterns in QoRE to QoL relations are not as common as expected. Perceived security of the environment was the only relatively universally validated QoL correlate. This observation was also confirmed in a recent Polish study on this subject (Dębek & Janda-Dębek, 2015). This is why we made a directional hypothesis:

QoL H1. Perceived security level in the area is positively associated with a sense of life quality.

Correlations between the remaining perceived living environment characteristics with the overall sensed quality of life were not obvious, therefore null hypotheses were made in their cases.

QoL H2. Architectural & Urban Planning Space has no connection with the declared sense of life quality.

QoL H3. External Connections have no connection with the declared sense of life quality .

QoL H4. Green Areas have no connection with the declared sense of life quality.

QoL H5. Internal Functionality has no connection with the declared sense of life quality.

QoL H6. Socialability has no connection with the declared sense of life quality.

QoL H7. Commercial Services have no connection with the declared sense of life quality.

QoL H8. Commercial Services have no connection with the declared sense of life quality.

QoL H9. Environmental Health has no connection with the declared sense of life quality .

QoL H10. Relaxing potential of the environment has no connection to the declared sense of life quality.

QoL H11. Stimulating potential of the environment has no connection with the declared sense of life quality.

QoL H12. Upkeep of the environment has no connection with the declared sense of life quality.

The above theoretical considerations of QoL and QoRE relations with the behavior of people in their areas of residence (BEH) also led us to the following hypotheses:

BEH H1. There is a curvilinear relationship between QoL and BEH.

BEH H2. There is a curvilinear relationship between QoRE and BEH.

No specific hypotheses were made regarding the results distribution in individual age groups because, as mentioned above, previous test results comparing the quality of life levels in seniors and others are inconclusive.

Previous studies on the quality of life of older people in various contexts (diseases, living in nursing homes, received support, physical activity, etc.) have been widely presented in the subject literature (e.g. Carmichael, Reis, & Duberstein, 2015; Fisher & Li, 2004; Orte, March, & Vives, 2007), but there are relatively few conclusive studies on relationships concerning the sense of seniors' life quality with the assessment about the quality of the inhabited environment.

Materials and Methods

A cross-sectional correlational study aimed to verify these hypotheses was conducted in Wroclaw in January-April 2015. Three questionnaires were used in the study: PL-APREQ & NA (Dębek & Janda-Dębek, 2015), WHOQOL-BREF (World Health Organization, 2004)[2] and the original Questionnaire of Social Activity in the Area of Residence developed specially for our project (see Appendix A).

[2] Questionnaire translated to polish by H. Baran-Furga, B. Harwat, K. Steinbartch-Chmielewska in 2004.

The assessment of the quality of environment and the quality of life

The PL-APREQ & NA and WHOQOL-BREF questionnaires have been published and discussed in detail in other articles (Dębek & Janda-Dębek, 2015; World Health Organization, 2004). Therefore, we will limit ourselves to only the most important information on these questionnaires.

PREQI & NA questionnaire (Fornara et al., 2010) is a tool to subjectively assess residential environment quality. In the Polish version PL-APREQ & NA, (Dębek & Janda-Dębek, 2015) there are 42 statements (13 thematic indexes) concerning five dimensions assessing the Perceived quality of residential environment and neighborhood attachment. Participants respond to statements on a seven-point Likert-type scale. In this research project an extended version of the tool was used, with additional questions about general neighborhood assessment: "Generally, how satisfied are you with the neighborhood where you currently live?" (rating from 0 to 6), as well as willingness to recommend the neighborhood to relatives as a good place to live, and willingness to move out from the neighborhood in the near future (both on a 7-point Likert-type scale).

The WHOQOL-BREF, a 27-item questionnaire for assessing quality of life is a well-established tool for measuring self-assessed life quality, including perceived somatic, psychological, social and environmental life quality. Each index comprises a few questions about subjective perception of a person's life quality. Subjects provide their answers on five-point Likert-type scales that, depending on the question, include answers "not at all" and "completely", "very poor" and "very well", "very dissatisfied" and "very satisfied", and so forth.

Self-assessed behavior – A Questionnaire of Social Activity in the Residential Area

This original questionnaire[3] consisted of 13 items related to five areas of pro-social and civic behavior: defense of the territory (area of residence), initiating neighbor relations, political activity, cooperation in the area of residence and doing favors for the neighbors. The respondents described their position with respect to the statements using the five-point Likert-type positions. A description of the questionnaire's theoretical basis, a list of items, and statistic details can be found in Appendix A.

Participants and sampling

We have analyzed two groups of city residents: young adults up to 30 years of age (group A) and seniors (group B) above 65 years of age. The study included a total of 62 people (39 women and 23 men) aged 18 to 85 (M = 48, SD = 26.63). Group A consisted of 32 people (17 women and 14 men) aged 18 to 28 years (M_A = 22 SD_A = 1.92), group B consisted of 32 patients (22 women and nine men) aged 65 to 85 (M_B = 74, SD_B =

[3] Questionnaire constructed by authors. For psychometric propertis of the questionnaire – see Appendix A.

4.57). The respondents reported secondary education (N = 25), first cycle (N = 22) and second cycle higher education (N = 13), and had lived in an area being the subject of the study for an average of 21 years (M_A = 7 years; M_B = 31 years). These were convenience samples–day, evening and extramural students from the Historical and Pedagogical Sciences Faculty at the University of Wroclaw as well as University of the Third Age students at the University of Wroclaw.

Procedure

The study was conducted in university lecture rooms. Participation in the study was entirely voluntary and no physical incentives were used. The subjects were asked to complete three questionnaires described above. The whole procedure took about 20 minutes.

Results

Contrary to our expectations, we did not observe a universal and unequivocal relationship of perceived safety in the inhabited area with somatic, psychological, and social QoL aspects. Moderate relationships occurred only in the case of somatic life quality, and only when all respondents were considered (Table 1). The relationship was not statistically significant in groups A and B when analyzed separately. Thus, the QoL H1 hypothesis was partially substantiated.

Among other aspects of QoRE, only socialability and stimulating potential proved important to QoL, and exclusively in connection with the QoL somatic aspect. Among all the respondents no other relations were found, which substantiates most of the null hypotheses of the QoL series (Table 1). However, separate analyses of groups A and B showed that QoRE and QoL relations are more complex and may be dependent on the individual's age or – more broadly – life situation (Table 2).

Table 1

Correlations between the quality of the environment (QoRE) and quality of life (QoL)

	QoL Somatic	QoL Psychological	QoL Social
QoRE Security	.29*		
QoRE Socialability	.28*		
QoRE Stimulating potential	.29*		

Note. N = 62. Intercorrelations of indexes (Spearman's Rhos) are presented in the table.
The only significant correlations (except marked as *ns*) are shown to improve readability.
** $p \leq .01$, * $p \leq .05$

Table 2

Correlations between the quality of residential environment (QoRE) and the quality of life (QoL) by respondent's age.

	Young Adults (A)			Seniors (B)		
	QoL Som.	QoL Psych.	QoL Soc.	QoL Som.	QoL Psych.	QoL Soc.
QoRE Architectural & Urban Planning Space		.36*	.40*			
QoRE Internal functionality	.36*	.41*				
QoRE Green areas		.54*				
QoRE Relaxing capability			.37*	ns	ns	ns
QoRE Environmental Health			.36*			
QoRE Security	.29*					
QoRE Socialability	.28*					
QoRE Stimulating potential	.29*					

Note. Young Adults (Group A) N = 31, Seniors (Group B) N = 31.
Intercorrelations of indexes (Spearman's Rhos) are presented in the table.
The only significant correlations (except marked as *ns*) are shown to improve readability.
** $p \leq .01$, * $p \leq .05$

When examining QoL we noticed that the life quality of young adults and seniors did not differ significantly psychologically. Statistically significant but small differences were observed in the social and somatic areas (Table B2). A statistically significant, moderate difference was also observed in the overall, single measure assessment of quality of life – $F(1.61) = 11.13$, $p > 0.01$, $\omega^2 = .14$: seniors assessed their overall life quality significantly lower than young adults.

We did not observe the assumed curvilinear relationship between QoL and BEH. BEH H1 has been falsified. Generally, the relationship between QoL with BEH was moderately positive and related to the psychological sphere of life quality and behavior connected with interpersonal contacts and mutual favors (Table 3). Analysis of the dispersed results indicated that these relationships were linear. These relationships looked completely different for seniors and young adults (Table 4). Behaviors most commonly associated positively (and linearly) with the quality of life were trying to establish neighborly relations ("I am usually first to chat up the neighbors", "I always try to get to know my neighbors"). Interestingly, in seniors these behaviors were related to other areas of life quality than in young adults. In seniors almost all social and civic residential area activities positively correlated relatively strongly and in linear fashion with the psychological quality of life.

Table 3

Correlations between behavior in the place of residence (BEH) and quality of life (QoL)

	QoL Somatic	QoL Psychological	QoL Social
BEH Initiating contacts		.30*	
BEH Neighbor favors		.30*	

Note. N = 62. Intercorrelations of indexes (Spearman's Rhos) are presented in the table.
The only significant correlations (except marked as *ns*) are shown to improve readability.
** p ≤ .01, * p ≤ .05

Table 4

Correlations between behavior in the place of residence (BEH) and quality of life (QoL) by the age of respondents.

	Young Adults (A)			Seniors (B)		
	QoL Som.	QoL Psych.	QoL Soc.	QoL Som.	QoL Psych.	QoL Soc.
BEH Defense of the territory						
BEH Initiating contacts	.46**		.39*		.43*	
BEH Political activity					.41*	
BEH Cooperation for the neighborhood					.40*	
BEH Neighbor favors					.43*	

Note. Young Adults (Group A) N = 31, Seniors (Group B) N = 31.
Intercorrelations of indexes (Spearman's Rhos) are presented in the table.
The only significant correlations (except marked as *ns*) are shown to improve readability.
** p ≤ .01, * p ≤ .05

We did not observe the assumed curvilinear relationship between QoRE and BEH. BEH H2 has been falsified. Overall, we observed two weak, positive, linear relationships of behaviors associated with initiating contact, with the perceived architecture quality and the living environment's social potential (Table 5). The results were very interesting when broken down by group. Relationships between QoRE and BEH are different and may even accept reverse directions depending on the age of the respondents (Tables 6 and 7).

Table 5

Correlations between behavior in the place of residence (BEH) and the quality of the environment (QoRE)

	QoRE	
	Architectural & Urban Planning Space	Socialability
BEH Initiating contacts	.27*	.27*
BEH Neighbor favors	.28*	

Note. N = 62. Intercorrelations of indexes (Spearman's Rhos) are presented in the table.
The only significant correlations (except marked as *ns*) are shown to improve readability.
** p ≤ .01, * p ≤ .05

Table 6

Correlations between behavior in the place of residence (BEH) and the quality of the environment (QoRE) among young adults (A)

	QoRE						
	ArchUrb	IntFun	Green	Security	Social	Relax	EnvHealth
BEH Defense of the territory							
BEH Initiating contacts	.53**	.41*	.40*	.56**	.36*	.38*	.47**
BEH Political activity							
BEH Cooperation for the neighborhood	.37*			.36*			.36*
BEH Neighbor favors	.65*			.43*			.47**

Note. Young Adults (Group A) N = 31
ArchUrb = Architectural & Urban Planning Space, IntFun = Internal functionality, Green = Green areas, Security = Security, Social = Socialability, Relax = Relaxing capability, EnvHealth = Environmental Health. Intercorrelations of indexes (Spearman's Rhos) are presented in the table.
The only significant correlations (except marked as *ns*) are shown to improve readability.
** $p \leq .01$, * $p \leq .05$

Table 7

Correlations between behavior in the place of residence (BEH) and the quality of the residential environment (QoRE) among seniors (B)

	QoRE						
	ArchUrb	IntFun	Green	Security	Social	Relax	EnvHealth
BEH Defense of the territory							
BEH Initiating contacts							
BEH Political activity		−.37*		−.40*			
BEH Cooperation for the neighborhood							
BEH Neighbor favors							

Note. Young Adults (Group A) N = 31
ArchUrb = Architectural & Urban Planning Space, IntFun = Internal functionality, Green = Green areas, Security = Security, Social = Socialability, Relax = Relaxing capability, EnvHealth = Environmental Health. Intercorrelations of indexes (Spearman's Rhos) are presented in the table.
The only significant correlations (except where marked as *ns*) are shown to improve readability.
** $p \leq .01$, * $p \leq .05$

The results indicated that the correlation between pro-social and civic behavior with the perceived quality of the environment occurs primarily in young adults. Similarly, concerning interdependence of the perceived environment quality with the perceived life quality, in young adults the relationships were more frequent and stronger. Interestingly, political activity of seniors was negatively correlated with two aspects QoRE; it seemed that the only factors that motivate seniors are discomfort and various deficits. Such interdependence is not evident in young adults, who incidentally engage

in incomparably less political activity than seniors; Political activity in young adults was close to zero (M = .45 SD = 1.65 at a scale of 0-10), and significant in seniors (M = 5.80 SD = 3.18). Young people were much less active in all areas of behavior (Table A3).

Conclusions

Despite the theoretical assumptions about the impact of environmental assessment on life quality, the results of our study regarding such a relationship are inconclusive. Neither the general feeling of life quality nor its psychological dimension was related to satisfaction with any dimension of environment quality across all respondents; most null hypotheses we have made support this discovery. We also failed to substantiate the hypothesis regarding the positive directional relationship of overall feeling of life quality, and primarily its psychological aspect, with the assessment of safety in the residence area.

An unexpected side-result was the failure to establish a clear relationship between life quality and the sense of security – the results of most previous studies (e.g. Czapiński, Sułek, & Szumlicz, 2011; Keul & Prinz, 2011; Mridha & Moore, 2011; Oktay & Rustemli, 2011; Perlaviciute & Steg, 2012) indicated that assessed security in the residence is probably one of the strongest predictors of the sense of life quality.

Particular significant correlations, such as the sense of life quality in a group of young adults with dimensions like socialability and stimulating potential are quite understandable. Assessing these environment dimensions involves, among other things, networking opportunities and possibilities for potential activity in a group of people, which for young residents—in need for activity and multiple contacts – may have tremendous importance and correlate positively with the sense of life quality.

If assessment of the quality of environment in any way correlates with life quality in a particular group, it is—judging by our results—more evident among young adults rather than seniors. Zero hypotheses were made indicating a general lack of relationships between most dimensions of environment quality with life quality. However, young adults demonstrated such correlations were significant. This could mean that modern young people attach importance to where they live, and care how their direct neighborhood looks and what it offers its inhabitants.

However, there is a completely different correlation between the sense of quality and pro-social or civic activity. Almost all significant correlations occurred exclusively in the seniors group. Seniors declared a higher sense of life quality and at the same time declared greater willingness to initiate contact, engage in political activity, cooperate for the benefit of the environment and doing favors for the neighbors. Considering that our study indicated, additionally, significantly higher social activity among seniors than young

adults, the results partially corresponded to those obtained by Czapiński and Błędowski (2014, p. 70) who, in their report on activity of seniors state that: "…the level of seniors activity turned out to be higher than expected based on stereotypical views. Seniors activity matches, if not surpasses, the activity of the younger generations."

Note, however, that while the activities surveyed in our study serve as good predictors of life quality among seniors, they may be completely inadequate to the life goals and desires of young people. Predictors of life quality for young people may involve activities of a different kind than those tested in this project. They may, for example, be more individualistic, such as: searching and finding an attractive partner; finding good, satisfactory work; and the possibility to achieve personal needs. It is therefore possible that young adults, in order to improve their quality of life, do not engage in behavior (or declare such behavior) which, generally speaking, benefits the environment. Therefore, as evidenced in our study, young adults actually refuse to engage in such behavior; pro-social behavior thus does not correlate with their quality of life.

One of the most important goals of our study was to verify hypotheses concerning the curvilinear relationship between pro-social and civic behavior and the assessment of environment quality. The relationships that emerged in our results do not confirm our prior hypotheses. Poor links between the two quality of environment dimensions and the two activity dimensions that emerge from all respondents had a positive and straight character. In contrast, the analysis performed in each group separately showed that in young adults all dimensions of environment quality correlated with activities like initiating contacts, doing favors for neighbors and cooperation that benefits the environment. In this group, no correlation was observed between the quality of the environment and political activity. Such correlation, however, appeared in the group of seniors, where satisfaction with the environment decreased the (declared) socio-political activity.

Negative correlations of perceived environment quality with seniors political activity in some way support our proposed person-environment fit theory. It turned out that the higher the perceived quality of environment in particular important dimensions (e.g. safety), the more senior citizens were willing to transfer the energy to other (perhaps) activities instead. However, the lower the environment quality, the more energy expenditure was declared in its favor – perhaps until needs were relatively satisfied. It is possibly a manifestation of our postulated mechanism homeodynamic regulation in relations with the place of residence.

Nevertheless, we cannot clearly determine whether the theoretical assumptions concerning the person-environment fit dynamics and the resulting human behavior are correct. Some evidence from this study as well as results from an unpublished study by Ilnicka (2015) suggest that the subject is well worth further research. In her field studies

(Ilnicka, 2015) conducted in late 2014 and 2015 in Wroclaw, Ilnicka indicated that the higher the people rated environment quality (Market Square), the less willing they were to sign a petition to the city authorities requesting to beautify the space (adding additional landscape architecture elements which would serve the residents). In short: the more the environment was „good enough", the less energy the respondents were willing to spend on its behalf, even if the expense would further improve the environment.

An interesting side-result of our study was the insignificant psychological differences between groups of young people and seniors in the sense of life quality (simultaneously with significant differences in the social and health spheres). Reduced life quality in the health and social spheres of seniors is quite obvious and corresponds with the aforementioned results by Czapiński and Błędowski (2014). Lacking differences between the two groups in their psychological outlook can be explained by the specificity of senior respondents, who were students at the University of the Third Age – naturally more active and highly educated than regular seniors in the Polish population.

Larger implications

Despite their ambiguity, the results open up possibilities for intriguing studies to verify the proposed man-environment fit theory based on the assumption of striving for psychological (and energy) balance. We have found some evidence to support an original theory, yet well-grounded in general psychology, concerning human behavior in the environment.

Although it was not the main goal, we have evidenced that in life quality studies and perceived residential environment quality it is well worth taking into account different age groups for comparison. We showed that some areas of life quality, and above all its relations with other activity spheres, significantly differ depending on the age of the respondents. Meanwhile, as indicated by demographers, the developed countries (particularly European), may expect the advent of the so-called *silver economy*—an economic situation with the growing number of seniors living longer and assuming the growing need to adapt residential areas to their needs and preferences (European Commission, 2015; Eurostat, 2012).

Limitations

Limitations of our study result mainly from non-probabilistic and few trials, making it unrepresentative. Additionally, while collecting statements about the sense of life quality or assessment of inhabited environment quality is worthwhile, behavioral studies involving collecting retrospective declarations or predictions of people seem to be far from sufficient. Actual behavior, rather than just declarations, should be the indicators for specific areas of behavior in the residence area.

Future research

In the future, the authors would like to focus on developing and further verifying the equilibrium-energy person-environment fit theory proposed in this study. A good idea would be to do an experimental or correlational study to verify its basic assumptions, either in controlled laboratory conditions, or directly in environments of real human activity. In both cases, we should concentrate on observing respondents' actual behavior, rather than declarations. Conducting such research seems possible and relatively simple. For example, attention should be directed to people's (all ages) actual political and social activity in various communities associated with their places of residence, such as communities or housing cooperatives.

Appendix A. Methodological details for Questionnaire of Activity in the Place of Residence (Kwestionariusz Aktywności w Miejscu Zamieszkania)

In the constructing this tool, we assumed that pro-social and civic behavior in the residence place are manifestations of social capital defined as active or potential activity of people in informal networks and institutions (Grootaert, Narayan, Jones, & Woolcock, 2004; Putnam, 2001). Naturally, the so-called bridging capital was considered in this context – openness, acceptance of diversity, cooperation with people outside the family or immediate circle of friends, etc. (Gandziarowska-Ziołecka, Średnicka, & Zyskowski, 2012). One cornerstone for building social capital, in addition to mutual trust and shared community standards, is people's collaboration for the community (Gandziarowska-Ziołecka et al., 2012). Therefore, while creating a list of pro-social and civic behaviors, we sought inspiration in existing tools used to measure social capital. We used some ideas present in the World Bank's multidimensional questionnaire of social capital (Grootaert et al., 2004), a special edition of the European Commission's Eurobarometer (European Commission, 2005) and The Detroit Area Studies Series (Marans & Stimson, 2011). Initial (unpublished) questionnaire versions included 19 items. Eventually, after pilot surveys and internal cohesion analyzes of the critical indexes: territorial defense, neighbor contacts, political activity, cooperation in the area and favors for the neighbors, the questionnaire comprised 15 items, which are presented in Table A1. Respondents rated each item on a five-point Likert-type scale ("definitely not" – "definitely yes"). Detailed statistics (including the distribution of variables) from the survey discussed in this article are presented in Tables A2 and A3.

Table A1

Activity in the Place of Residence Questionnaire

Index	Items	α	R_{CC}
1 Defense of the territory		.89	
	I take appropriate action when I hear people making noise in my area.		.74
	I reprimand people who litter up my area of residence.		.75
	When someone destroys buildings, staircases, sandpits, lawns and other elements of my surroundings, I protest.		.82
	We strongly react when I see someone destroying greenery in my area of residence		.87
2 Neighborly contacts		.88	
	I always try to get to know my neighbors.		.78
	I am usually the first to initiate conversation with my neighbors.		.78
3 Political activity		.87	
	I vote in elections to community councils.		.78
	I attend the meetings of my community / housing cooperative.		.78
4 Cooperation for the neighborhood		.80	
	I take an active part in the work to change my area.		.70
	In the last 12 months I cooperated with close or distant neighbors.		.70
	In the last 12 months, I took part in a protest or supporting action.		.62
5 Neighbor favors		.70	
	I happen to help my neighbors if they have any problem.		.54
	I happen to do small favors for my neighbors.		.54

Note. α Cronbach's α; Rcc – corrected item-total correlation (item-rest correlations);

Table A2

Activities in the Place of Residence Questionnaire Statistics

	Min	Max	M	SD	Sk	Ku	K-S	K-Sp	α
1 Defense of the territory	0	.13	5.54	2.86	.43	.59	1.15	.13	.89
2 Neighborhood contacts	0	10	4.46	2.40	−..12	−.59	1.07	.20	.88
3 Political activity*	0	10	3.12	3.69	.67	−1.14	2.24	.00	.87
4 Cooperation for the neighborhood*	0	10	1.79	2.45	1.66	2.31	1.83	.00	.80
5 Neighbor favors	0	10	5.35	2.43	−..37	−..21	1.02	.24	.70

Note. Valid N = 62; * Non-normal distributed data;
Min = minimum, Max = maximum, M = mean, Sk = skewness, Ku = kurtosis, K-S = Kolmogorov-Simirnov Z, K-S*p* where H0 states that the distribution is normal; α = Cronbach's α

Table A3

Activities in the place of residence and age of the respondents

	Young adults (A)				Seniors (B)			
	Min	Max	M	SD	Min	Max	M	SD
1 Defense of the territory[a]	0	8	4.54	2.11	0	.13	6.54	3.18
2 Neighborhood contacts[b]	0	.6	3.32	1.95	0	10	5.61	2.29
3 Political activity[c]	0	.9	.45	1.65	0	10	5.80	3.18
4 Cooperation for the neighborhood[d]	0	.3	.51	.85	0	10	3.06	2.85
5 Neighbor favors[e]	0	8	4.45	1.98	0	10	6.25	2.35

Note. Valid N = 62;

[a] a statistically significant difference between the groups A and B: F 8.50; p <.01; ω^2 = .11

[b] a statistically significant difference between the groups A and B: F 17.92; p <.001; ω^2 = .21

[c] a statistically significant difference between the groups A and B: F 68.99; p <.001; ω^2 = .52

[d] a statistically significant difference between the groups A and B: F 22.70; p <.001; ω^2 = .27

[e] a statistically significant difference between the groups A and B: F 22.70; p <.01; ω^2 = .14

Appendix B. Statistics on the perceived quality of life

Table B1

WHOQOL-BREF Statistics

	Min	Max	M	SD	Sk	Ku	K-S	K-Sp
1 Somatic	2.43	4.71	3.58	.53	.07	−.67	.64	.80
2 Psychological	2.17	5.00	3.69	.57	−.53	.57	1.14	.14
3 Social*	1.33	5.00	3.46	.70	−.78	.94	1.40	.03
4 Environmental	2.38	4.63	3.53	.47	−.31	.31	.82	.49

Note. Valid N = 62; * Non-normal distributed data;
Min = minimum, Max = maximum, M = mean, Sk = skewness, Ku = kurtosis, K-S = Kolmogorov-Simirnov Z, K-S*p* where H0 states that the distribution is normal; α = Cronbach's α

Table B1

WHOQOL-BREF and the age of respondents

	Young adults (A)				Seniors (B)			
	Min	Max	M	SD	Min	Max	M	SD
1 Somatic[a]	2.86	4.57	3.76	.46	2.43	4.71	3.38	.54
2 Psychological	2.17	5.00	3.75	.61	2.17	4.50	3.63	.53
3 Social[b]	1.67	5.00	3.67	.67	1.33	4.33	3.25	.67
4 Environmental	2.38	4.64	3.58	.53	2.50	4.38	3.48	.42

Note. Valid N = 62;

[a] a statistically significant difference between the groups A and B: F 9.22; p <.01; ω^2 = .12

[b] a statistically significant difference between the groups A and B: F 6.32; p <.05; ω^2 = .08

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