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Towards people's experiences and behaviours within their worlds. The integrative-transactional framework for studying complex people-environment interactions

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Abstract

The purpose of this article is to propose the relatively universal modern framework of person-environment interactions. The theoretical grounds, such as K. Lewin's Field Theory, A. Bandura's Doctrine of Reciprocal Determinism, and contemporary integral approaches, are presented. Then, the original idea of the integrative-transactional framework for studying complex person-environment interactions is proposed. It includes the person, environment, and behaviour, all engaged in constant bi-directional and reciprocal interactions correlated to the specific mental states. These mental states, e.g. person-environment fit, place attachment, place identity, place image, sense of place, and place satisfaction, as well as their possible behavioural correlates, are described and discussed. Critical dimensions of the person, e.g. demographics, health, cultural influences, personality, knowledge, lifestyle, values, motives, and emotions are explained, conceptualised, and their possible indicators are discussed; so are the dimensions of the environment, e.g. formal features, activities, functionality, social milieu, sensory stimulation, symbolic cues, physical coherence, and affordances. In the conclu-

sion, the practical usage of integrative-transactional framework for studying complex person-environment interactions as a generalised, highly usable and comprehensive conceptual toolbox for a variety of people-environment studies is presented. Also the need of extensive use of existing concepts rather than creating new, and the necessity to look for parsimony in modelling the people-environment relationships is discussed.

Key words: people-environment relationship, environmental perception, environmental behaviour, person environment fit, place making, field theory, reciprocal determinism.

1. Introduction

That people are determined by their environment is nowadays an indisputable contention. As R. Gifford (2007) claimed, 'every human activity occurs in a physical context […] residences, offices, schools, parks, streets, studios, retail settings, vehicles, institutions or factories […] all these settings affect everyone's behaviour, interactions, emotions, thoughts, and well-being' (Gifford 2007: 559). R. Oldenburg (1999) put this even more emphatically: 'The environment in which we live out our lives […] is an active, dictatorial force that adds experiences or subtracts them according to the way it has been shaped' (Oldenburg 1999: 296); it is a 'tyrannical' force.

A converse notion is that the environment is determined by people as agents. They shape it, populate, build, demolish, renew, revitalise it, care about it; or they do not. In a word, people perform various actions leading to particular short- and long-term effects in natural or built socio-economic environments. Even some dictionary definitions of the environment emphasise this people-as-cause aspect, for example: '[The environment is] the natural world, as a whole or in a particular geographical area, especially as affected by human activity' (Oxford Dictionaries, 2014). A similar definition can be found in the Longman dictionary, framing the environment as 'the air, water and land […] which can be harmed by man's activities' (Summers 2005).

A third notion is that how people feel, think, and behave is not only the consequence of where they are but also who they are — of the kind of people they are biologically and psychologically, of their cultural background, lifestyle, and, probably, evolutionary heritage. On the other hand, who people are now is also, in a part, the effect of what conditions they experienced in the past that shaped them. It results from the kinds of pressures the environment exerted on people.

It was hypothesised for over a hundred years, that the people-environment (P-E) bi-directional relationship is an extremely important factor determining the world, behaviour, and people (Tatarkiewicz 1981; Schultz, Schultz, 2008). Today even more is known. At least since the 1960s person-environment relationships (P-ER) have been hypothesised in terms of inevitable intertwinement; people are always 'conjoined, enmeshed, and immersed in their world' (Seamon 2012: 4). People and their worlds constitute one inseparable whole.

The issue raised in this article refers to the possibility of establishing a relatively universal framework transcending particular research situations, for empirically studying complicated, multidirectional P-E interactions. As was stated above, P-E relationships seem to be of critical importance to understand the world that surrounds and shapes us. Therefore, establishing such a framework would be a fundamental step to conducting more systematic research, important both from the basic and applied science standpoints.

There are many theories of P-E relationships of varying breadth in existence. There are also a lot of approaches to research and a whole universe of terms and concepts used, quite often somewhat vague. All of them are scattered across extensive textbooks (Bańka 2002; Bell et al. 2004; Gifford 2007) or thousands of articles on hundreds of topics more or less related do P-E relationships. A variety of points of view, thousands of studies and mountains of evidence (not infrequently contradictory), fuzzy concepts, and the totality of modern P-E relationship studies (from investigation of the simple mechanics of environmental stimulation to concerns related to global warming and human counter-environmental behaviour) breed confusion. The omnipresent problems with definitions of concepts, operationalisation, indicators and measurement of ideas related to P-E relationship pile up these difficulties, making it quite a task to systematise and understand P-E relationships as parts of a single whole.

Therefore, in this article an attempt is made to (1) discuss the possible theoretical grounds for a broad range of modern P-ER studies; (2) develop a framework for studying P-ER, grounded in the integration of theories and approaches developed to

date; (3) organise a conceptual platform, define critical terms as strictly as possible, and provide guidelines for operationalisation and possible measurement.

Before the attempt to accomplish the above-mentioned objectives can be made, the foundation of the conceptual order has to be established. It is impossible to consider the 'general' environment – political, economic, cultural, social, physical, built, natural, etc., at the same time, not to mention establishing a framework for studying such a broad universe. Therefore, from this point on, whenever the term environment occurs in the following discussion, it is taken to mean built and natural physical settings, including their symbolic qualities and the people who populate them.

2. Theoretical grounds for the person-environment relationships integrative framework

2.1. Foreword to the theoretical grounds

In the relatively long and rich history of person-environment relationships (P-ER) research multiple approaches have been taken to reveal their nature. One of the best known, widely-cited, and sound paradigms is K. Lewin's field theory (Lewin 1943; 1952; Hall et al., 2013; Kihlstrom 2014). It has been exceptionally influential in social, organisational, and environmental psychology, and is briefly described later on along with its most expanded form, A. Bandura's (1978) Doctrine of Reciprocal Determinism. Moreover, in the latest resume of the variety of approaches to person-environment relationship (P-ER) studies, R. Gifford (2007) reported seven major theoretical directions. Four of them are of particular interest when it comes to developing a general framework for P-ER, and is be described below as well. There are also many narrow-scope, albeit relatively widely used, concepts, e.g. person-environment fit, place attachment, place identity, and place satisfaction, which are useful in considering the holistic nature of the P-ER framework proposed later in this article. They are given attention too.

2.2. Field Theory and the Doctrine of Reciprocal Determinism

K. Lewin (1943; 1952) assumed that every person lives in a never-ending relationship with the surrounding (social) environment. He proposed a famous formula,

B = *f* (P, E), where a person's behaviour (B) is a function of personality (P) and individual mental representation of the environment (E).

At first he did not define the particular nature of the relationship between person and environment, especially as framed in the above-mentioned equation, so these two factors could be treated as nearly independent, albeit jointly determining behaviour. After years of 'cold war' between personality and social psychologists (the former claiming that behaviour is determined by personal traits, the latter that it is the effect of the social environment), it is agreed nowadays that personal and environmental influences on behaviour are at least additive (Kihlstrom 2014).

However, K. Lewin believed that personality and environment are not only additive but also strictly interdependent elements constituting a unified psychological field (Kihlstrom 2014), a kind of total personal world, life space, life 'wholeness' (Lewin 1943; Hall et al., 2013). As J. F. Kihlstrom (2014: 796) put it, 'persons and situations together constitute a unified field in which behaviour takes place'. K. S. Bowers' (1973) Doctrine of Interactionism (DI) closely approximated this approach. He assumed that personal and environmental determinants of behaviour are engaged in dynamic mutual interactions: B = *f* (P x E).

The latest and probably most complete interpretive extension of Lewinian FT is the Doctrine of Reciprocal Determinism (DRD) introduced by A. Bandura (1978). He assumed that the person, the environment, and behaviour are all not only mutually tied, but that relationships in this trilateral system are all bi-directional. The person and the environment were assumed to be totally interdependent.

J. F. Kihlstrom (2014) describes these relationships in detail. First, the person's psychological processes, states, and dispositions (traits, attitudes, values, beliefs, moods, motives, needs, etc.) influence his or her behaviour. On the other hand, the behaviour influences person's mental states – e.g. after one has behaved in some way towards environment, he or she will consequently experience some particular emotion. Second, the objective physical and social setting influences the behaviour (e.g. social situation may induce aggression or altruism). Obviously, on the other hand, behaviour changes the environment. Third, a person influences his or her environment as much as the environment influences the person.

Although both K. Lewin's FT and K. S. Bowers' DI, and even more A. Bandura's DRD, were focused primarily on social environment, their assumptions seem reasonable to any other sphere, especially bearing in mind the Lewinian concept of field as a totality of coexisting facts (Lewin 1952), not only social ones. Moreover, K. Lewin himself wanted his theory to be applied to every branch of psychology (Hall et al., 2013).

2.3. Stimulation, behaviour setting, decision-making and integral theories

In this section four general and still alive approaches to P-ER studies are presented. Most of them have 1960s origins and are used to this day. None of them is the clearly dominant approach nowadays; none but the behaviour setting theory is uniquely associated to a single researcher, as was the case with previously discussed field theory, DI or DRD.

First, there are stimulation theories, dated at least from J. F. Wohlwill (1966). Their focus is the environment as the source of sensory stimulation and people as its receptors and interpreters. The discoveries within this approach are mainly about people's adaptation, level of arousal, and reactions when to confrontation with various environmental stimuli (e.g. colours, textures, shapes, noise, crowding, traffic, etc.). Stimulation theories also include experiential-phenomenological studies. The latter approach is extremely difficult to conduct studies and draw conclusions in, especially if based on the orthodox premise held by pioneers of the field, e.g. C. Strumpf and E. Husserl, who wanted to grasp people's pure, unprocessed, holistic experiences of the world (Schultz, Schultz, 2008).

Next is the behaviour setting theory rooted in R. Barker's (1968) ecological psychology. It suggests the existence of stable behavioural patterns specific to particular physical settings. For example, a Christian church as a category of setting can be characterised by a well-defined, stable set of behaviours, e.g. praying or crossing oneself; a typical behaviour pattern for a pub is drinking beer and chatting with friends, etc. People who enact certain roles in such settings behave in a certain way because the environment imposes setting-specific rules of behaviour (customers in pub would drink beer, bartender would serve beer, etc.).

Then there are decision-making theories, which try to deal with complexity of human choices in the environment. Theoreticians, e.g. T. Gärling, A. Biel and M. Gustafsson (2002), have focused on human decisions resulting in choices between alternatives. Each alternative may result in specific impacts on the environment. They are concerned above all with causes of people's preferences to make choices either in the collective or in self-interest. This approach is especially popular in analysis of pro-ecological behaviour and could be employed to better understand why people behave in a certain way towards the environment in conservation and ecopsychology.

Fourth, and most important for the purpose of this article, come integral theories. These approaches tend to show P-ER in the most general and complex way. They have their roots in the works of K. Lewin (Lewin 1943; 1952) mentioned earlier, as well as those of I. Chein (1954), and in more recent viewpoints of D. Stokols and S. A. Shumaker (1981) as well as I. Altman and B. Rogoff (1987). These approaches integrate assumptions of (1) stimulation theories regarding triggering particular mental states and behaviour by environmental stimuli; and (2) parts of behaviour setting theory regarding determination of behaviour by environmental features. Moreover, P-ER in integral theories are framed by an assumption of continuous interactions between people and environment, and reciprocal influences between them – similarly as was hypothesised in the previously discussed DRD. Who people are, what their world-view is, how they behave, etc., are the facts and processes determined by their environment. Nevertheless, at the same time, the features of this environment are determined by us time and again. For example, people might visit and browse shopping malls because they are welcoming, convenient, weather-independent places to shop and entertain them as well as for leisure. Thus, modern city-environments determine people's behaviour. On the other hand, shopping malls are re-developed in certain ways, e.g. their food courts are expanded, because people like to meet friends there or eat and drink quickly; then there are more and more shopping malls and those in existence are made more and more alike because people are looking for convenience in every part of their lives and they perfectly meet such a need. Thus, modern city dwellers determine their environment.

The latest integrative approaches, e.g. the one presented by H. C. Clitheroe, D. Stokols and M. Zmuidzinas (1998), stress the need for including the context (especially social context) and time into considerations of P-ER. A person's particular behaviour in the environment is driven by and in turn drives the surrounding social factors, in addition to physical and personal determinants, at a particular time. Social factors could include relationships between individuals or groups, as well as general group dynamics, which have been hypothesised at least since K. Lewin (1943) and A. Bandura (1978). One of the most salient thoughts of H. C. Clitheroe et al. (1998), albeit also not entirely original, seems to be the assumption that the context of P-ER is not stable. Quite the opposite, they suggest, it is continuously changing. This important premise should be taken into consideration, especially when one would like to draw conclusions on P-ER from particular, time- and context-sensitive studies.

3. The original person-environment integrative-transactional framework

3.1. General assumptions

Following this review of theoretical grounds, a related and adequate fram work is outlined. The whole concept is ultimately enveloped in a 'Lewinian spirit' and the Doctrine of Reciprocal Determinism in particular. It was built as a proposal for a new paradigm among contemporary integral theories. However, the aim behind its construction is to introduce not only a purely theoretical framework, but also to propose relevant, precise conceptualisation of its elements and to show that they may be measured. The central premise of the original framework is that the P-E relationships are trilateral in nature and include three elements: the person, the environment, and the behaviour (P-E-B). All of these theoretical entities are reciprocally related to each other (Fig.1), so causes and effects may appear everywhere. They are probably always present, although people are not always able to directly observe and measure them, especially given that they are even not always conscious of their existence. Even those elements and relationships which cannot be observed and which remain beyond conscious experience are not merely hypothetical, though, as they can

be measured indirectly, understood in terms of E. C. Tolman's (1938) intervening variable.

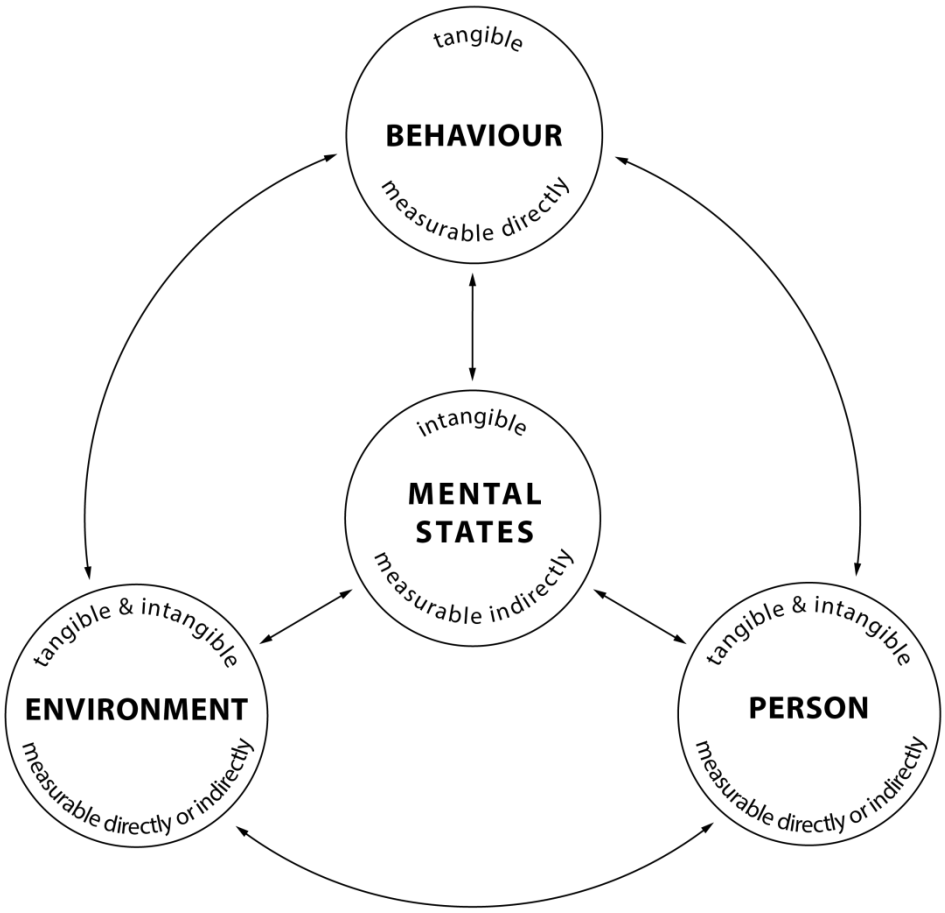

Figure 1. Central premise of the person-environment integrative-transactional framework – trilateral, reciprocal person-environment-behaviour relationships

Source: the author

The second important assumption is that bi-directional relationships between the three elements result in a range of various mental states, which are discussed below. While they are separate concepts they may all be generally fit into the classic concept of attitude defined as '[an] individual's propensity to evaluate a particular entity with some degree of favourability or unfavourability' (Eagly, Chaiken, 2007), which is the point of view popular also among other scholars (e.g. Aronson et al., 1997; Wojciszke 2006; 2011). Attitude could be operationalised in a classic tripartite

attitudinal framework, referring to cognitive, affective, and behavioural evaluative response to stimuli. Such stimuli have to comprise distinguishable entities, e.g. another person or other people, inanimate objects, the environment as a whole or various environmental features, etc. They may also take the form of specific defined ideas (and ideologies). The intentions built on evaluative response and evaluation itself may be conscious or not, but can still be measured, either directly or indirectly. Such intentions lead to particular behaviour, at least with some known probability, even if the nature of the connection between attitudes and behaviours is one of the most problematic issues in modern psychology (Ajzen, Fishbein, 2005; Wojciszke 2006).

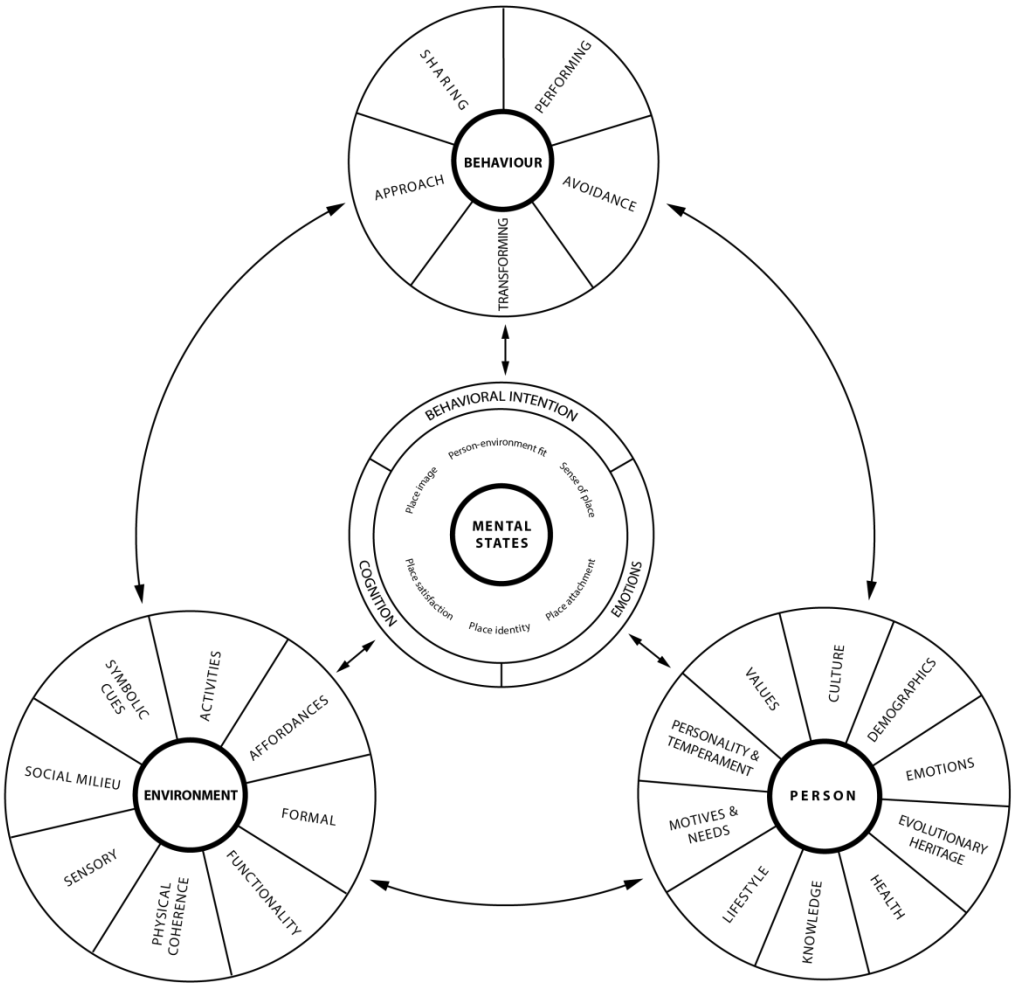

Figure 2. The integrative-transactional framework for studying complex person-environment interactions (PEI-ITF)

Source: the author

The third aspect of the framework is the set and conceptualisations of particular personal characteristics, environmental qualities, and types of behaviour which are especially important and near-universal in P-ER studies. The dilemma here is to find and establish in the integrative-transactional framework only those directly observable objective or subjective facts, as well measurable hypothetical constructs, which are relevant to as broad range of research as possible, but not as broad as highest-level theories as DI or DRD, not to mention Lewinian field theory. Such an attempt is depicted in Figure 2 and described below in detail.

3.2. Dimensions of the person

3.2.1. Foreword to the dimensions of the person

To begin with the person, there are at least ten dimensions worth considering in the P-ER framework as they seem to drive people's behaviour and perception, as well as can be driven by them (in a reciprocal relationship that is part of the paradigm accepted here). On a continuum from physical to mental these include (1) demographics; (2) health and physical condition; (3) evolutionary heritage; (4) cultural influences; (5) personality traits; (6) knowledge; (7) lifestyle; (8) values; (9) motives and needs; and (10) emotions. Each of these dimensions has been proved to be in significant relationship at least with environmental perception (a little sample of hundred studies is mentioned below). Many of them are intangible constructs, impossible to measure directly. Hence, in most of the discussion to follow, precise conceptualisations of the constructs as well as suggestions of their measurement are presented.

3.2.2. Demographic characteristics

Demographic variables, e.g. gender, age, or socio-economic status have been proved to be correlates of P-ER. Gender and age correlated with perception of colour (Knez 2001). In some situations men are more sensitive than women to spatial crowding (Freedman et al., 1972; Kaya, Weber, 2003). J. D. Balling and J. H. Falk (1982) argued that children prefer savannah-type environments over other types. Generally,

children and adults prefer less wild settings than youngsters (Bernaldez et al., 1987). B. Goodchild (1974), as well as P. P. Karan, W. A. Bladen, and G. Singh (1980), showed that socioeconomic status affects cognitive mapping of the environment. E. Krupat (1985) presented evidence suggesting that cognitive mapping is also affected by gender. There is also a wealth of other evidence of importance regarding demographic factors, e.g. in P-EF or place satisfaction (Gifford 2007).

3.2.3. Health

Health and physical conditions can be operationalised and measured, as showcased by the World Health Organisation in their WHOQOL survey (1998). The general rule seems to be that the more ill or disabled the person is, the tougher it is to achieve P-EF in the process of trilateral P-E-B interaction. It is obvious that disability is to be correlated with perception of the environment as well as behaviour towards it. An example of this may be constrained behaviour and lowered assessment quality when architectural barriers are experienced by people in wheelchairs. Deafness or blindness render the environment staggeringly different on the basic stimulation level than it is experienced by healthy people; one can imagine how much, then, must final, interpreted cognitive representation of the setting differ, with all of its (behavioural) consequences.

Mental health conditions constitute a more subtle matter. Although there is not much empirical evidence on environmental preferences of healthy vs. non-healthy people (Srinivasan 1987), there is more than enough for a consideration of the effects of the environment on mental health and stress levels. For example, there is evidence that natural or natural-like environments are restorative and help people maintain good mental health (Staats et al., 2003; Maller 2005). On the other hand, there is strong evidence that certain spatial arrangements, open-space offices for instance, are positively correlated with fatigue and health problems (Hedge 1984; Fried 1990; Croon et al., 2005).

3.2.4. Evolutionary heritage

This heritage of evolutionary history of humankind can be also called 'phylogenetic influence' on P-E-B (Reber, Reber, 2008). Probably the most persuasive, albeit a bit vague, concept linking evolutionary heritage with contemporary P-ER is the so-called 'savannah hypothesis' by G. H. Orians and J. H. Heerwagen (Buss 2001). It implies that people's environmental preferences are determined by their 'phylogenetic memory', inherited from their far ancestors living and coping with environmental issues on the African savannah. It is hypothesised that people react affirmatively to settings which gave us simultaneously a good visual perspective and a shelter (Mealey, Theis, 1995). Another popular concept of this type is 'biophilia' introduced by Wilson (1984) and additionally popularised, especially in 1980s, e.g. by S. Kaplan (1987) and 'biophobia' popularised by R. S. Ulrich (1995). There is some evidence for people's evolutionary preference for environments which include some natural elements, as well as for their evolutionary fear of some other environments (Gullone 2000; Bell et al., 2004).

3.2.5. Cultural influences

Culture is one of the most fuzzy concepts in the social sciences (Spencer-Oatey 2012). It may be conceptualised as a 'set of basic assumptions and values, orientations to life, beliefs, policies, procedures and behavioural conventions that are shared by a group of people, and that influence (but do not determine) each member's behaviour and his/her interpretations of the "meaning" of other people's behaviour' (Spencer-Oatey 2008: 3). A similar definition is shared by other authors (Reber, Reber, 2008), although there exist simpler but also vaguer ones, e.g. G. H. Hofstede's culture as 'a collective programming of the mind which distinguishes one group from another' (Hofstede 1984: 25), which would be even harder to operationalise.

It is hard to pinpoint studies on P-ER related to culture defined in such a broad way. R. Gifford (2007) found a few studies indicating that nationality or ethnicity affect preferences for particular landscapes, which would make cultural influence on P-ER very probable. A frequently cited study on Pygmies by C.M. Turnbull (1961) revealed that people's perception of environment may be critically affected by

culture. Carpentered world hypothesis presented by R. Gifford (2007) implies that people's (Western) perception is culturally affected by popularity of straight lines and ubiquitous rectangularity. Finally, there is one global cultural variable which can make a substantial and measurable difference in P-ER – collectivism vs. individualism, concepts described e.g. by P. Boski (2009). Recently Y-N. Cho et al. (2013) demonstrated that this cultural difference is actually related to differing attitudes towards the environment.

3.2.6. Personality and temperament

If PE-R could be determined by one's demographic characteristics, health, evolutionary heritage, and cultural influences, it is all the more affected by strictly individual factors. After all, in the P-E-B framework the environment is an objective, socio-physical setting and a mental construct. Attitudes, the mental states emergent from the P-E-B circular process, definitely belong to a 'someone'. The myriad individual - personal determinants of PE-R may be categorised into a few dimensions: personality and temperament; knowledge; lifestyle; values; motives and needs; and more or less dynamic emotional states.

Personality may be and has been conceptualised in a number of ways (Reber, Reber, 2008; Hall et al., 2013). It is hard to find a universally accepted definition; some say this is in fact impossible (Hall et al., 2013). For the purpose of establishing the PE-R framework personality may be conceptualised in a 'classic' and environmental way. In the former sense it can be defined as 'an individual's behavioural and emotional characteristics, generally found to be stable over time and in a variety of circumstances; an individual's habitual way of responding' (Landy, Conte, 2010: 97). It may be operationalised in many ways, e.g. R. R. McCrae and P. T. Costa's (2008) popular five factor model (openness, conscientiousness, extraversion, agreeableness, and neuroticism), and measured by relevant inventory, e.g. NEO-FFI (Zawadzki et al., 1998; McCrae, Costa, 2010). There is strong evidence that personality, so defined, is related to the environmental perception, preference, and behaviour (Bańka 1997; 2002; Gifford 2007).

The other meaning of the personality, more relevant to purpose of this article, is environmentally based. The personality here is treated as the particular pattern of relatively stable personal environmental dispositions and behavioural intentions, e.g. pastoralism; urbanism; environmental adaptation; stimulus-seeking; environmental trust; antiquarianism; or the need for privacy and mechanical orientation (McKechnie 1974; 1977). It can be measured by Environmental Response Inventory (ERI) (McKechnie 1974). There is some evidence of its validity and discriminant ability (Gifford 2007) indicating that it might be incorporated into the P-ER framework.

The temperament is the second great foundation of individual differences. It is related to relatively stable qualities of a person which are primarily determined by congenital neuro-biochemical mechanisms; hence it is hard to change and manifests since the early childhood. One of the most interesting and widely cited approaches to this phenomenon is sensation seeking theory by M. Zuckerman (Zuckerman 1984; 1994), where temperament is framed as 'a trait defined by the seeking of varied, novel, complex, and intense sensations and experiences, and the willingness to take physical, social, legal, and financial risks for the sake of such experience' (Zuckerman 1994: 27). In M. Zuckerman's theory temperament is measured on the Sensation Seeking Scale (SSS) (Zuckerman et al., 1978; Oleszkiewicz-Zsurzs 1985). The SSS is especially interesting when P-ER relations are considered. There is some evidence that it affects cognition of environmental stimuli (Zuckerman et al., 1993; Stamps, Nasar, 1997; Dębek, Janda-Dębek, 2012).

3.2.7. Knowledge

Knowledge, defined as the entirety of information stored by a person, is correlated with the previously discussed concept of culture, the latter building at least part upon the personal knowledge of particular members of society. There is no universal method to measure knowledge. However, on the most general level it could somehow be screened by tools measuring crystallised or general intelligence, e.g. the Polish survey called 'Omnibus' (Jaworowska, Matczak, 2002). In most situations, though, the specific dimension of knowledge will be tested or assumed.

Various aspects of knowledge can undoubtedly influence the PE-R in a variety of ways (Bell et al., 2004; Gifford 2007). For example, when people of different professional or educational backgrounds (knowledge) are put into the same setting, they will probably process, interpret, and assess it differently (Sternberg 2001; Minsky 2007), as well as manifest different behaviours or at least the behavioural intentions towards it. Clear empirical evidence of this variability was recently presented by M. Dębek (2013). An ordinary building, chosen on the basis of its representativeness for contemporary residential architecture and its non-controversial architectural character, was evaluated completely different by architects and lay people. It was also differently associated and categorised. Similar effects have been reported at least since the 1970s, and an attempt to construct a mental model accounting for this phenomenon was made by R. Gifford et al. (2000).

3.2.8. Lifestyle

There are a lot of measures which describe and allow for classification of people in terms of who they are (e.g. demographics, cultural background, personality, motives, needs, and values), how they feel (e.g. mental and physical health, emotional state), or how they would possibly act in certain situations (e.g. personality, temperament, motivation). All these measures are important in P-ER. What is missing is a concept related to the question: How does the person actually live? Not hypothetically, possibly, indirectly, through relationship with others, but simply here and now. It is at this point that the concept of 'lifestyle' should be introduced.

Lifestyle is a concept related to various ways of daily life: choices, system of values, relationships, and daily practices (Jacyno 2012). In other words, it is a relatively stable pattern of organising everyday life (Bogenhold 2001). Although the term 'style of life' was introduced by Alfred Adler in the 1920s, it originates more decisively in the 1960s, together with its classic activities-interests-opinions (AIO) and demographics measurement (Plummer 1974), e.g. Values and Lifestyles – VALS survey and typology (Mitchell 1984). The AIO approach to people's-metrics includes probably the most complete set of information on a person's ordinary life-functioning amongst all of the inventories known today. Classic lifestyle description is based on

measurement of how people spend their time, what their interests are, what they place importance on in their immediate surroundings, their opinions about themselves and the world around them, and characteristics e.g. their stage in life (Plummer 1974). The concept is especially eagerly and practically utilised in marketing studies (Kotler et al., 2013), it also seems, however, to be of critical importance to P-ER.

To the author's knowledge there has been no research binding one's lifestyle in the classic AIO approach to his or her relationship with the environment, as the latter is understood in this article. Nevertheless, it is evident that lifestyle had to be significantly related to P-ER through at least a few logical links.

First, lifestyle is about activities, e.g. hobbies, shopping, entertainment, or community engagement. It is necessary to return to the concept of P-EF (person-environment fit) to understand that if the environment would allow one to realise activities of one's interests, their mental state would be 'positive' and so, probably, would be their behaviour. Moreover, lasting experience of a particular environment with specific potential of activities may change one's lifestyle.

Second, lifestyle is about interests, like family life, work, community, recreation, food, etc. The bi-directional relationship to the environment would be similar to what is discussed in the person-environment fit section, yet the interests might not change as simply as activities. Thus, the potential for frustration (and destructive behaviour) would probably be higher than when mere activities could not be undertaken.

Third, lifestyle is about opinion (as well as values, beliefs, etc.). The link with P-ER here may not seem as direct as for activities and interests, but is quite certain. There is empirical evidence suggesting that values and beliefs form the base of people's (environmental) assessment, attitudes and behaviour. (This issue is discussed in more details in the next section.) Furthermore, it is impossible to assess the extent to which social environment specifically can influence one's opinions, as relationships are, as always, bi-directional. The existence of such influences is a major focus of social psychology.

3.2.9. Values

Personal values are part of the universe of personal traits and, of course, were conceptualised variously over the years. One of the best known definitions and operationalisation of values was proposed by M. Rokeach (1973), who argued that 'centrally held, enduring belief which guides actions and judgments across specific situations and beyond immediate goals to more ultimate end-states of existence' (Rokeach 1973: 161). Personal values, according to him, are standards which determine personal actions, attitudes, evaluations, assessments, etc. They can be measured, for example, by the Rokeach Value Survey (RVS), there are, however, also other popular systems of value measurement e.g. List of Values (LOV) (Kahle 1983) or S. H. Schwartz's Value Inventory (SVI) (Schwartz 1994). Important research suggests links between values, e.g. biospheric or altruistic, and pro-environmental concerns and behaviour (Gifford 2007).

A less abstract and vivid example of how values can be correlated to P-ER can be seen in how people interact with retail environments. For example, P. Homer and L. Kahle (1988) discovered that people who valued self-actualisation and social affiliation demonstrated more favourable attitudes toward a shopping mall and, consequently, visited it more frequently. W. R. Swinyard (1998) revealed a positive relationship between a 'sense of belonging', 'warm relationships' and 'security' to the frequency of visits in shopping malls. He also proved the existence of a positive link between consumer pursuit of 'excitement,' or 'fun and enjoyment of life' to the frequency of visits. The study was multiplied, more research was done and evidence presented, one is, however, of particular interest here. E. E. Telci (2013), who investigated materialism as a personal value-trait, showed that people who visit shopping malls frequently and enjoy spending time there reported higher materialistic values and engaged in greater compulsive consumption. Hence, it is additionally evident that it is not the person who affects his or her environment in this case; it's the environment that changes the person. Personal values seem to be the inevitable part of the P-ER framework.

3.2.10. Motives and needs

Personal motive is a state of arousal which leads an individual to act in a particular way, usually emergent because of some physiological or mental shortage. It is highly correlated with need – a state or an object which improves a person's well-being. Some treat motive and need as synonyms (Reber, Reber, 2008). Despite precise conceptualisation of the above-mentioned terms, the fact is that they are keys to motivation grasped as a state which leads an individual to action aimed at reducing the shortage or simply at improving his or her well-being (Maruszewski et al., 2008). Motivation may be grounded either in intrinsic needs or external requirements and tasks.

The variety of needs or motives is so great that it is impossible to make even a short revision of their particular relationship to P-ER. Nonetheless, it is critical to notice that whatever the need is, either physiological (e.g. hunger or thirst) or mental (e.g. need of cognition, safety, affiliation, achievement, personal development, etc.) it strongly affects the P-EF and, consequently, potential behaviour.

Needs and motives may be measured either directly or indirectly. Direct measurement involves surveying in various ways, which may be conducted in a qualitative or a quantitative mode. As is well-known (Bryman 2012), the former enables one to obtain a categorised statistical picture of "the most probable" or "the most popular" needs within a group; it also allows easy assignment of each person to some meaningful segment. The method may be helpful whenever research is aimed at a general understanding of PE-F for some group of people with environments of some type (e.g., characterised by particular features). The quantitative method, on the other hand, enables one to gain insight and deeper understanding of the needs of particular people or a small group in a specific environment. It may also help to elucidate the very nature of a particular P-EF as well as its consequences.

Indirect measurement of needs may be performed by tools intended to measure lifestyles, health or personality, for example. People active in some particular way, interested in certain activities and things, as well as having particular opinions about the surrounding world, have an accompanying set of needs and are motivated towards achieving specific goals. Some would say that they have their particular per-

sonal projects (the concept discussed in the P-EF section), rooted in their lifestyles and constituting them at the same time. The easiest way to catch needs and motives indirectly is to use personality or temperament inventory, e.g. personality Five Factor Inventory (NEO-FFI) (Zawadzki et al., 1998; McCrae, Costa, 2010), Environmental Response Inventory (ERI) (McKechnie 1974; 1977), or Sensation Seeking Scale (SSS) (Zuckerman et al., 1978; Oleszkiewicz-Zsurzs 1985), mentioned above in this article. For example, if someone is highly extrovert, his or her needs are probably, at least in a part, highly attached to social world; such a person needs frequently interacts with others for its own rewards. Hence, such a person would probably feel higher P-EF in an environment filled with many people, even a bit crowded; he or she would probably approach such an environment. If someone is a sensation seeker, obviously one of his or her dominant needs is to experience sensations. Thus, he or she would probably experience higher P-EF in stimulating settings, and therefore will approach it, be satisfied, and maybe more identified with such an environment.

Personal motives and needs have to be included in the P-ER framework, either in a direct or indirect way, as they are inevitably tied to the experience of P-EF, which, in turn, is hypothesised to be one of the key drivers of the PA, PID, PS, and behaviour.

3.2.11. Emotion

Although it is another ambiguous concept, emotion is agreed to be a subjective mental state that sets the priority for specific behaviour (Maruszewski et al., 2008). It appears in the process of cognitive interpretation of a particular situation as a whole (LeDoux 2000). Emotions modify what and how a person thinks (e.g. Forgas 1995; Kahneman 2012). A well-known and verified hypothesis of emotional congruence posits that cognition is coherent with emotional state (Maruszewski et al., 2008) Generally, when people are in a good mood, their cognition is affected by 'good' memories and imagery; when people are in a bad mood, it is quite opposite. Thus, emotions may affect environmental cognition in various ways and may be induced by any of environmental features, especially those which can be consciously perceived and interpreted by a person.

Before it is possible to move further in the revision of the relationship of emotion to cognition and behaviour, the concept of mood has to be introduced, however. As T. Maruszewski et al. argue (2008), mood is a positive or negative affective state, usually not very intense, which sets a person to anticipate the relevant (positive or negative) mental states in the future. It differs from emotion because it is not necessarily induced by an immediate stimuli and it is less intense, but 'wider' and more long-lasting (Reber, Reber, 2008).

To illustrate the effect of emotional state on cognition in a physical setting, A. Falkowski and T. Tyszka (2009) reported a study where experimenters induced a positive mood in people and then requested the assessment of a car and a TV. It turned out that assessment by people in a good mood was significantly more favourable than this by people not positively stimulated. They also described how building a good mood in a consumer setting, e.g. by a specific smell or music, may affect their shopping behaviour.

At the moment, though, the opposite effects are more frequently reported, that is, the focus is on how various environments affect emotions and moods (Bell et al., 2004; Gifford 2007). One of the most recognisable systematic approaches to this topic is the circumplex model of emotional response to environment first introduced by J. A. Russell (1980) and then revised and presented by J. A. Russell, L. M. Ward and G. Pratt (1981). They suggested that every emotional impact of the environment on the person may be considered primarily on two continua: arousing vs. not arousing and pleasant vs. unpleasant. They assumed that a particular emotional perception and subsequent behaviour is correlated with environmental variables, of course, but also with personal characteristics, e.g. a specific temperament (sensation seeking, etc.). They also introduced the pleasure-arousal hypothesis, which suggests that people are prone to approach settings which are maximally pleasurable and moderately arousing. It was tested empirically and reported as highly probable (Foxall, Greenley, 1998).

What is critical here is the notion that emotional impact of the environment on the person or the person's general emotional state may be operationalised and empirically measured. For example J. A. Russel, A. Weiss, and G. A. Mendelsohn (1989)

proposed a Single-Item Scale of Pleasure and Arousal, which is coherent with the circumplex model of emotional response mentioned above. It seemed to be highly useful but moderately valid (Killgore 1998). The contemporary approach probably inspired by this one-item technique is, e.g. Layered Emotion Measurement (LEM) (Huisman et al., 2013), designed to catch the emotional response to digital environment, or PrEmo (Desmet 2004), which is a purely non-verbal self-report instrument intended to measure emotions most often elicited by the products experienced by a person. In turn, a popular and valid general mood measurement which could be used in environmental studies is the Positive and Negative Affect Schedule (PANAS) (Watson et al., 1988), known and introduced in Poland as "SUPIN" by P. Brzozowski (2010). Moreover, the physiological arousal elicited by the environment as a whole or by particular environmental features may be also physically measured, e.g. by a polygraph, which might bring P-ER studies to a most positivistic and behaviouristic paradigm.

3.3. Dimensions of the environment

3.3.1. Foreword to the dimensions of the environment

In order to build a coherent and relatively universal multidimensional scheme of the environment, where all of dimensions are tangible or, at least, ready to be operationalised and measured indirectly, contemporary urban design frameworks shall be investigated. They are relatively complete, multidimensional by their very nature, reasonably clear, and rather practical, therefore not too complex and highly useful. An excellent selection of such concepts was presented by M. Carmona, T. Heath, T. Oc, and S. Tiesdell (2003). Two ideas are of the highest importance and interest here: J. Punter's (1991) approach to analysis of SOP and J. Montgomery's (1998) approach to analysis of place. Not all of the elements mentioned by them are relevant to the P-ER framework, however, because of their urban-specific anchorage; nevertheless some of those elements should be introduced.

Both authors (Punter 1991; Montgomery 1998) described space in three general dimensions: (1) activity (e.g. land use, social and ambient flow, as well as behaviour, events, vitality); (2) physicality (e.g. geometry, textures, materials, colours, details,

furniture, scale, intensity); and (3) meaning (e.g. image, symbolism, cultural associations). When combined with significant and relatively universal dimensions of the environment well-established in environmental psychology (Bell et al., 2004; Gifford 2007), e.g. sensory qualities (vision, touch, smell, etc.), social features (number of people, quality of people), physical coherence and object affordances, the environment would be completely described and P-ER may be studied. Such an approach to the environment is shown on Figure 2. Unlike the dimensions of the person, most of the dimensions of the environment are tangible and measurable directly, which makes the discussion easier and more precise. Nevertheless, some of them, e.g. physical coherence, symbolic cues and affordances are simultaneously tied to the tangible physical world and intangible mental construals in their very essence. They are conceptualised in following sections.

3.3.2. Formal features

There are vastly numerous studies concerning P-ER in the context of the formal features of the environment. The empirical evidence of the significance of formal features to P-ER is obvious. Therefore a number of known conceptualisations of those relationships include formal characteristics of the environment or objects, e.g. as one of the drivers of the person's attitude towards architectural objects (Dębek 2012), aesthetic preferences (Nasar 1994; Galindo, Hidalgo, 2005), goals, decisions, and intentions, as well as behaviour, cognition, emotion and well-being (Gifford 2007) or, finally, residential environment quality (Bonaiuto et al., 2003). This formal dimension ostensibly does not need to be conceptualised. In fact, one important remark is needed. Formal features herein mean only tangible, directly measurable qualities e.g. geometry, textures, materials, colours, graphics, details, etc.

3.3.3. Activities

To adequately understand the importance for P-ER of various activities which occur in the environment, the classic works by J. Jacobs (1993/1961), W. H. Whyte (1980) or, more recently, J. Gehl (2011) should be recalled. They deal with the perceived vitality and flow of an (urban) setting, created mainly by other people. Gener-

ally, the more vital the setting is, the more potential it has to be positively perceived and to elicit a place satisfaction in people. The more activities are present or possible, the more positive would probably be the sense of place. One caveat should be made here, though: the particular impact of specific activities on one's relationship with their environment is strongly related to their personality, needs, or lifestyle. Activities have been conceptualised only as tangible and measurable actions e.g. people walking, sitting, playing and resting. The specific set of actions to be measured has to be adjusted to the particular scope of P-ER study.

3.3.4. Functionality

Functionality is a tangible dimension which can be conceptualised as the existence of various amenities for people. In an urban context, these can be shops, places to sit or rest, as well as stores operating under a particular brand or restrooms in a specific shopping mall or high street context. They can consist in a bus stop, trash bin, bicycle sheds, trees, a garden or a park, in studies of residential environments. In any case, functionality of the environment will meet the person's needs and respond to their lifestyle, which hypothetically improves or reduces experience of P-EF in the setting. Examples of the importance of functionality are numerous. In the study of shopping malls by K. El Hedhli, J-C. Chebat and M. J. Sirgy (2013), functionality of the mall turned out to be one of the most important factors of 'shopping well-being'.

3.3.5. Social milieu

Human environment is the universe of both lifeless objects and people (and animals, which are beyond the scope of this article). Unless one would like to investigate hermitages, there are always people around in every setting, starting from homes and neighbourhoods, through streets, districts and cities, to with deserts, jungles, and tropical islands. People interact with other people, either in a direct or indirect way. Sometimes they are just present without physical contact. Still, a variety of nonverbal means of communications, e.g. gazes, gestures, vocal or olfactory cues, etc., are sent and received. Such physical or intangible interactions affect mental

states and behaviour of the person in the environment in many ways (Knapp, Hall, 2000). Thus, it is critical to include a social dimension in the P-ER framework.
Social milieu in the environment means the existence of any person or a group, characterised by two sub-dimensions: quantitative (how many people exist) and qualitative (what kind of people exist, especially in terms of their demographics and, more broadly, lifestyles).

One of the most deeply investigated aspects of social milieu in environmental studies is social density and crowding. Since J. B. Calhoun's (1962) discovery of 'behavioural sink' (in rats), which means a situation of overcrowding resulting in various behavioural pathologies, dozens of studies were conducted, considering the effect of social density on humans (Bell et al., 2004; Gifford 2007). Nowadays it is evident that effects of the presence of other people are critical to one's experience of the environment and subsequent behaviour. Even so, these effects are ambiguous and dependent on many temporal, personal, and environmental factors. There are a number of situations when the presence of too many other people results in negative outcomes, e.g. various types of stress, physical illness, or cognitive overload (Gifford 2007), and is accompanied by avoidance behaviour or intention. On the other hand, some researchers have argued that one of the most stressful and a dangerous situation for humans is isolation (Carnahan et al., 1974; Krupat 1985). Moreover, latest reviews and studies of high social density in some environments, e.g. in retail settings, suggest that intensive presence of other people may be preferred and cause positive outcomes (Mehta 2013).

Apart of the number of people in the environment and the problem of density, there is also an important qualitative aspect to social milieu – who they are. There is empirical evidence suggesting that some effects on people's P-ER, for example image of place which they mentally construct, correlate with the congruence of the self-image with those of other users of this environment (Stachow, Hart, 2010; Hart et al., 2013).

3.3.6. Sensory stimulation

Environment is not only a geometry, and is not even simply populated with human beings. Every environment smells and sounds in a specific way (Porteous 1996). It can be also touched or tasted (Pallasmaa 2012), or the mental construal of such sensations would probably occur at the moment of viewing or hearing the setting. These features are not easy to investigate, as neither smell nor sound, nor taste are objective, tangible phenomena (Kosslyn, Rosenberg, 2006). They can be measured, but only indirectly via people's conceptual processing and declarations.

The majority of studies regarding sensory stimulation in the environment are devoted to vision, of course, as it is the dominant sense of healthy people (Bell et al., 2004; Gifford 2007). There are, however, also reports from studies of smell and sound. Researchers have been especially eager to test the latter, particularly as regards noise.

The soundscape of the environment, noise in particular, is intimately related to P-ER. It is evident that it not only affects perception of the setting, but also influences particular behaviour or even inhibits it (Bell et al., 2004; Gifford 2007). This is worth noting that perception of noise (as that of smell, taste, etc.), as well as its associated behaviour, is heavily dependent on personal sensitivity to auditory stimuli in general (Weinstein 1980). The second important remark to make is that noise, even loud noise, is not always annoying. It depends on the situation and the source of sound. In one study by J. L. Nasar (1987a), the more noisy the urban-downtown setting was, the more it was preferred, as long as the noise came from human (non-mechanical) sources.

To the author's knowledge there have been far fewer studies on odours and factors related to the other senses. If it was empirically studied, the evidence of their importance is present in business literature, particularly in marketing studies. For example J-C. Chebat and R. Michon (2003) showed that ambient scent in the shopping mall contributes to the perception of the mall and of the quality of the products within. Finally, the importance of touch and senses other than vision in personal experience of the physical setting, architectural in particular, was hypothesised and

argued by J. Pallasmaa (2012). Unfortunately, the argument, albeit poignant, was not grounded in empirical science.

3.3.7. Symbolic and historical cues

As argued by M. Carmona et al. (2003), or earlier by A. Rapoport (1990), the symbolic role of environments is key in the P-ER. A symbol in a physical setting is an object which potentially represents or indicates other object or idea (Reber, Reber, 2008). J. K. Lenartowicz (2010) has suggested that experiencing symbolic objects evokes emotions. Such emotional reaction is, according to him, usually unconscious and emerges from the tension built on the contrast between an object's simplicity and the complexity of the meaning which this object can transmit. This emotional dimension notwithstanding, symbolic cues in the environment offers hints to people enmeshed in it. They 'suggest' how one may behave, what kind of actions are allowed or appropriate (Genereux et al., 1983; Rapoport 1990), similarly as it was argued in the behaviour-setting theory. Such symbolic cues indicate who is or was probably the owner of the setting, object, space, etc. Certain objects or settings may symbolise power, dominance, and various political messages (Knox 1982). R. Gifford named this type of symbolism 'ideological communication' (2007: 86). If decoded as such, in a way intended or unintended by their creators, symbolic cues are strongly related to P-ER, and to environmental behaviour in particular. The mental states (e.g. PA, SOP, PID, or PI) emergent in a relationship with such symbolic objects, as well as subsequent behaviour, would be moderated via one's attitudes towards the ideas which symbolic objects represents or indicates. Thus, it is critical to include this dimension of the environment in P-ER relationships, especially given that various symbolisms of environmental objects have repeatedly been empirically proven to significantly affect P-ER (Gifford 2007).

The methodological problem here is how to measure symbolism and symbolic potential of objects in the environment or the whole setting? Symbolism is in the eyes of beholder, as he or she has to be culturally prepared for decoding the meaning (in his or her particular way); it has to be measured indirectly, though, by asking the people about what they actually perceive in terms of symbols. Still, symbolic poten-

tial may be assumed by researchable to some extent, at least when the meanings common for a particular culture are considered. Potentially symbolic buildings or settings may be chosen in an arbitrary way, at least at the beginning of the undertaken research, for further testing such of the symbolism hypothesis and its possible consequences.

3.3.8. Physical coherence

Physical coherence is a complex concept. For the purposes of the present article it can be defined as the degree to which an environment is physically ordered, and includes elements logically interconnected in terms of origin, form, and function. It does not denote monotony or uniformity, though. It refers to environments endowed with qualities which allow one to experience cognitive consonance[1] and the optimal level of cognitive stimulation at the same time. It is a kind of equilibrium between congruent functional variety, contrast, complexity, and novelty. Although undoubtedly inextricably tied to a set of tangible physical qualities of the environment, coherence is also extremely intangible and may be measured only indirectly by asking about people's assessment of such defined quality. Thus, as in case of any assessment, coherence would be heavily dependent on the observer's cultural background, knowledge, and personality or temperament.

There have been some empirical studies on coherence, complexity and, novelty. It is evident that people prefer congruence (Wohlwill 2008) and moderate complexity (Nasar 1987b; Stamps 1991; 1999) in urban settings. The preference for typicality (a case of logical interconnection between elements in the environment; the degree to which a place or object meets people's mental image of it) has also been studied. In places which seem pleasant to humans typicality is preferred, it lowers, however, the preference for places anticipated as aversive (Hagerhall 2001; Herzog, Stark, 2004). Therefore, it is highly probable that physical coherence, as defined above, somehow affects P-ER.

[1] The cognitive consonance is a concept introduced by L. Festinger (1957). It means the state of comfort, the result of perceived consistency between person's expectations, beliefs, ideas, or values and the actual reality he or she is experiencing here and now; a cognitive dissonance, on the other hand, is a state of mental discomfort, when the actual experience of a person conflicts his or her expectations.

3.3.9. Affordances

Affordances are qualities of an object or a setting which are tied to their automatically recognisable functions – the person's abilities to use it and the activities which the person can undertake that are immanently attached to the object's existence in a setting (Bell et al., 2004). The concept was introduced and established by J. Gibson (1986), whose ecological approach to perception has been one of the most interesting ideas in environmental psychology. According to J. J. Gibson (1986), there are no mental construals of possibilities in a particular environment. These possibilities – 'what is there in the environment', 'how could I use it' – just exist there, one does not need to perform any cognitive process to access them. One has to unveil them, follow them, use them. As J. J. Gibson himself described the concept, 'they are in a sense objective, real, and physical, unlike values and meanings […] but, actually, an affordance is neither an objective property nor a subjective property; or it is both if you like' (1986: 129). The author classified them as the qualities of the environment, however. First, because they actually seem to be more environmental than mental entities, and second, because the particular range of 'usability potential', as the concept of affordances might be interpreted, is immanent to a particular environment. It may be unveiled or not, but it actually exists.

The link between affordances and P-ER is hypothetical but highly probable. Namely, as it was written many times earlier in this article, every person in the environment has his or her own lifestyles, motives and needs, among others. The congruence between these mental facts and the objective qualities or potential of the environment results in P-EF. This, in turn, may lead to specific behaviour. The 'usability potential' or affordances may be the key to build and the level of the P-EF. Technically, affordances are intangible and, owing the fact that they hypothetically exist on the edge of physical and mental world, may be measured only indirectly. They can be indicated by the researcher arbitrarily, though, and verified in a subsequent deductive study. The methodological issue and its solution here are similar to the ones related to symbolism.

3.4. Mental states (correlates of person-environment relationships)

3.4.1. Foreword to the description of mental states

As mentioned above, the second assumption of the proposed framework is that relationships of the person, environment and behaviour correlate with various mental states like: place attachment, person-environment fit, place identity, place image, place satisfaction and the sense of place, to name only the six most extensively studied over the years. Although they may often conceptually overlap to some extent, are not entirely synonymic. Their nature, their relationship with the person, environment and behaviour, as well as conceptual intricacies distinguishing one from another are discussed in the few following sections.

3.4.2. Person-environment fit

The person-environment fit is grounded in the seminal work of D. Stokols (1979). He argued that congruence between person and the particular environment 'denotes a ratio between existing and ideal levels of need facilitation for a given situation' (1979: 44). This ratio is determined in the interaction of personal attributes and environmental conditions. Thereby this point of view is consistent with broader integral theories, discussed earlier. The personal attributes in D. Stokols' view are: goals and plans; expectations based on prior experiences with similar situations; developmental factors; physiological drivers; personal traits; and behavioural styles. Later on, M. Wallenius (1999) defined the P-EF as 'perceived opportunities of realising personal projects in the behaviour settings of everyday life emphasising the projects according to motivational salience' (1999: 133). Personal projects are generally defined as interrelated sequences of volitional, contextually embedded actions intended to achieve personally salient goals (Wallenius 1999; Presseau et al., 2008). In the latest literature on the topic, derived from organisational psychology, P-EF was defined either generally as 'the congruence, match, or similarity between the person and environment' (Edwards 2008: 170), or, closer to social space, as 'the congruence between personality characteristics, personal abilities or needs, and the social and organisational setting' (Horelli 2006: 18).

The level of fit between person and his or her environment is critical in P-E studies, as it is a mental state rather than the objective fact and results in particular mental states and behaviours of people. It is about the personal need and goals which can or cannot be fulfilled or accomplished when one faces surrounding milieu. And if they cannot, frustration arises, which, in turn, either motivates the behaviour aimed at overcoming the obstacles (Reber, Reber, 2008) or induces negative emotional states, leading to stress (Nevid 2009) and various behavioural outcomes, including occasional aggression (Berkowitz 1989). The following situation can be easily imagined: someone needs to park his or her car when coming home from work, but there is no parking designed in the neighbourhood. The P-EF is low as one's personal 'car project' (the most salient at the particular time) cannot be accomplished. Frustration ensues, and one is motivated to overpass the obstacle, so he or she leaves the car whenever that is possible, albeit illegal, e.g., on the lawn. The police (also part of the environment) fine the car owner. Next time when the opportunity will occur, this car owner could vote for transforming the lawns to car parks. The environment will change into a great parking lot, therefore other needs will not be fulfilled, and more actions would be undertaken by some other people, etc., to address this new situation. Such multiple, diversified P-E processes are probably endless and thus the environments never achieve any final equilibrium; it always changes in some way depending on people's actions that are shaping it.

3.4.3. Place attachment

The term 'place attachment' (PA) is usually conceptualised as bonding between individuals and their environments (Lewicka 2008; Scannell, Gifford, 2010; Lewicka 2012). In terms of PA, environments are widely agreed to be defined as meaningful locations – spaces which have unique meaning, as argued, e.g. by Y-F. Tuan (1977) and, more recently, by T. Cresswell (2004) or H. Easthope (2004). Such bonding, or the bond as the measurable effect of PA, is usually related to positive emotional and behavioural outcomes, and considered a part of human identity (Lewicka 2005; 2008; 2011; 2012). It is tied to symbolic meanings (Stedman 2002). M. Lewicka has argued that place attachment is an attitude, with relevant affective,

cognitive, and behavioural components (Lewicka 2012). L. Scannell and R. Gifford (2010) view PA as an affective, cognitive and behavioural process as well. They stress that the tripartite process is closely related to personal individual traits and cultural background, as well as characteristics of place. Nonetheless they do not suggest any causal or directional relationship between these three fundamental dimensions. To sum up, PA can be viewed as the specific mental process in the P-ER or an intimate attitude toward the environment, related to some – usually positive – human reactions.

Place attachment would not be such an important concept if it was not intensely explored, including in terms of its relationship to mental and behavioural outcomes mentioned above (Lewicka 2011; Manzo, Devine-Wright, 2014). Place-community attachment turns out to be a positive predictor of individual well-being and overall life satisfaction. It has also been positively related to bonding social capital and lessening egocentrism in the community (Lewicka 2011). All of these studies are merely correlational, so it is impossible to draw conclusions about causality. It is appropriate to view these relationships as bi-directional. There are also negative correlates to PA – decreased mobility and threats to children's development in place-attached but pathological communities (Lewicka 2011).

Generally, PA is studied in the context of residential environments. Nonetheless, it should be included in the P-ER framework whenever any environment is considered. If it is assumed that PA is some intimate attitude toward place, and that it is correlated with well-being and overall satisfaction, it becomes an important concept. It cannot be excluded, though, that one is attached not only to a residential environment but to other meaningful locations as well. These can be anywhere, as long as they retain a unique meaning to observer, given that PA can be specific not only to a particular location but also to general categories of places (Gifford 2007), such as traditional marketplaces, churches, etc. Place attachment as a category relevant to the approach to P-ER outlined here fits in with existing integral theories.

3.4.4. Place identity

M. Lalli (1992) argued that place identity may not only be a mental state but also function as a category for a research paradigm. The term has at least two meanings. The first is objective and refers to the unique character of a location derived from its physical characteristics which play a significant role in forming the identity of individuals; it is 'a crucial component of place' (Stedman 2002: 563). Second is mental-subjective, and denotes the relationship of an individual or a group with a place, his or her identification with it, constituting a never-ending, dynamic process (Kalandides 2011). These two aspects of identity remain in a close, reciprocal relation (Lalli 1992). Similarly to PA and P-EF, interaction between environment and a human subject is the basis of the formation of PID. The difference is that PID is tied to the self, particularly to self-esteem and self-distinctiveness (from others).

There is little empirical evidence related to behavioural correlates of PID, not to mention established causal relationships. There is some evidence that PID is correlated to the restorative qualities of a location (Korpela, Hartig, 1996). People also favour the places they identify with, or are more prone to identify with places which they favour (Gifford 2007). There is some indirect evidence of PID importance, e.g. that emotional ties to a location are positively related to political activity (Lalli 1992) or pro-place activity (Stedman 2002). Moreover, PID is indirectly and negatively related to likelihood of illegal anti-ecological behaviour (Hernández et al., 2010). Place identity could be studied within stimulation rather than integral theories.

3.4.5. Place Image

One could ask 'Why use the term "image" and not the broader category of "meaning?". The reason is methodological. If image of the environment is one of the most ambiguous terms in environmental studies, the meaning of place, of which image seems to be part or variant of, is even more unclear; probably because of its exceedingly holistic character. The problem is that even apologists for meaning in physical settings, such as A. Rapoport (1990), posit the centrality of meaning in people's experience of places and objects, but are in trouble when it comes to conceptualising the term, not to mention its operationalisation. To conceptualise 'meaning', as

A. S. Reber and E. S. Reber (2008) argue, is one of the toughest, even hopeless, tasks to solve for linguists and philosophers. It does not get any easier if the critical remark is added that there is no meaning at all without a subject to construe it. In other words, there is no meaningful thing, setting, or environment in itself; they all have only an individual, exact, referential, associative, and connotative meaning *for someone*. Nonetheless, it is common knowledge that environments carry meanings for P-ER. As argued M. Carmona et al. (2003: 94), 'the symbolic role of buildings and environments is a key part of the relationship between society and environment'. How to approach this issue, then, apart from performing qualitative, holistic investigations of people's narratives about their environment related impressions?

The rescue could come from marketing studies, and place marketing in particular. Because their strong focus on application and care for the effect measurability, marketing studies use the term 'image' to catch at least some crucial aspects of the meaning of place (Stachow, Hart, 2010; Hart et al., 2013). The image of the environment is, then, a term related to the person's cognitive processing of sensory information received in a particular situation (Stern, Krakover, 1993). Hence, it is a derivative of perception in general (Kosslyn, Rosenberg, 2006), anchored both in the mind of an observer and in their physical setting.

Most intuitively perhaps, the image of the environment may be defined in the K. Lynch's (1960) way, who has conceptualised image of it as the specific mental construal helping people to orient and navigate. It could also be understood, however, in a broader sense, closer to the meaning of place, as a dynamic process (Stachow, Hart, 2010) of individual's feelings and impressions about place (Stern, Krakover, 1993). Unfortunately, then it would overlap with SOP or other 'all-round' place-related constructs. An extensive literature review, as well as original studies by C. Hart et al. (2013), on the image of place (town centres in particular) indicate that the concept of environmental image approached broadly would largely coincide with the general perception of place. Moreover, it would be more problematic than the latter, as it would have to include other vague constructs, e.g. PA or atmosphere, within it. Nevertheless, unique dimensions of the mental structure of the place image have been reported (Stachow, Hart, 2010; Hart et al., 2013) that do not overlap with

other ordinary concepts and measures of the environment. They include cleanliness; historical value of the environment (especially the existence of historical objects); reputation; self-image congruence with other users of the environment; and symbolism (especially symbolic landmarks). They are all tied to physical entities. They are also all mental, relative, intangible, and measurable in an indirect way only. Place image is an important aspect of P-ER, to the present author's knowledge, however, existing empirical evidence of this importance is reported mainly in place-marketing studies (Finn, Louviere, 1996).

3.4.6. Sense of place

This term, as a basis of a research paradigm, seems to be the fuzziest amongst all place-related concepts. Sense of place (SOP) is an extremely subjective, individual, experiential, intangible construct which may dramatically change over time (Easthope 2004). Some have argued that SOP converts a location into a place with special sensory, emotional, and behavioural characteristics for individuals (Moslemi, Ayvazian, 2014). Others treat it as an example of specific attitude (Jorgensen, Stedman, 2001).

However, as the construct is an experiential one, it is neither explicitly cognitive nor emotional in nature. Others have suggested the very essence of SOP to be the 'meaning attached to a spatial setting by a person of group […] [which] resides in human interpretations of the setting' (Jorgensen, Stedman, 2001). A. Campelo, R. Aitken, M. Thyne, and J. Gnoth (2014) argue that sense of place is determined by meaning given to it by its dwellers, but add that it is an experiential phenomenon, constructed from social and sensuous experiences at a specific time. Such an approach to SOP seems to be similar to J. B. Jackson's (1994), who argued that SOP is about the events of a place: daily, weekly, or seasonal occurrences which people look forward to or remember and subsequently share their stored impressions of them with others. Those factors are more important in establishing SOP than the physicality of a place, which is critical in short-term experience, and then, in the longer term, replaced or significantly complemented by socio-cultural factors. A location has to be regularly experienced physically, though, for the person to mentally maintain a vivid

sense of place instead of place nostalgia (Hay 1998). Speaking of experience, SOP could be compared to the term experience itself, as seen in contemporary experience management theories in business literature. For example, P. Newbery and K. Farnham (2013) have defined experience as 'the set of information you have noticed and stored, along with your emotional and rational responses that arose from the process of receiving the information and making sense of it at the moment of occurrence, modified through the reinforcement or weakening of these perceptions based on other experiences that have accumulated over time' (Newbery, Farnham, 2013: 64). This non-phenomenological interpretation is tempting for positivists and reflects the SOP, at least in general; only one thing — place itself — is missing in such an explanation. If the spatial aspect were added, a reasonable operational definition of SOP could be built.

From an environmental psychologist's traditional point of view, SOP seems naturally closest to the Latin *genius loci* – an intangible spirit, or atmosphere, of a place. Hardly possible to operationalise, burdened by a lack of agreement on a shared approach to measurement, SOP is extremely hard to examine within a positivistic scientific paradigm. Even if some scholars tried to operationalise SOP quite precisely (Jorgensen, Stedman, 2001), hardly anything is known about its correlation with particular behaviours. However, it is commonly known and reasonable to assume that SOP has to be very important to P-ER, as it is closely connected to the experience of the surrounding world, both physical and social, and could in fact constitute the experience itself. For example, R. Hay (1998) suggested that a fully developed sense of place provides subjective feelings of security, belonging, and stability. Even if only for that reason, SOP should be considered in any P-ER framework. Sense of place as a topic of research perfectly meets stimulation theories.

3.4.7. Place satisfaction

This is another merely subjective construct framed as a foundation for the specific approach to P-ER studies. Place satisfaction (PS) is the emotional reaction and cognitive assessment of the perceived quality of the surrounding environment, including its physical and social features. It is strongly related to P-EF, built as it is on

the assessment of congruence between one's needs and the perceived potential of the setting (Ramkissoon et al., 2013). It does not overlap with PA, PID and SOP, yet all of them seem to be significantly interrelated, as shown by H. Ramkissoon et al. (2013), who demonstrated, among other findings, that PA is superordinate to PID and PS. Pro-environmental intentions and behaviours and environmental commitment are the mental and behavioural correlates of PS (Davis et al., 2011; Lopez-Mosquera, Sanchez, 2011). However, the direction of these relationships depends on context. In a study by R. C. Stedman (2002) PS correlated negatively to engagement in place-protective behaviours. For H. Ramkissoon et al. (2013), in turn, PS correlated moderately and positively with low-effort pro-environmental behaviours (e.g. signing a petition in support of a place) and directly opposite to high-effort pro-environmental behaviours (e.g. volunteer one's private time to projects helping a place).

In general, PS is inevitably rooted in the concept of satisfaction. The latter, in turn, is tied to the perceived congruence between one's needs and actual situation, as showed by K. Smith (2011) in her extensive review of satisfaction and residential satisfaction in particular. In that sense PS is closest to P-EF, discussed above. K. Smith (2011) has presented the concept of 'community satisfaction' strongly related to place satisfaction, and gathered evidence that satisfaction is positively correlated to community commitment, or even to life satisfaction in general. It should, then, not be omitted in the P-ER framework. Similarly to SOP, place satisfaction fits best into research embedded in broader stimulation theories.

Various kinds of PS have been investigated as classic tripartite attitudes (see e.g. Jorgensen, Stedman, 2001; Bańka 2002; Bonaiuto et al., 2003; Bell et al., 2004; Ke-Tsung 2006; Zeisel 2006). In some studies the core of PS seems to be evident in the term 'preference' or 'orientation towards environmental objects' (e.g. Mealey, Theis, 1995; Galindo, Hidalgo, 2005).

3.5. Types of behaviour

As may surprise non-psychologists, an endless debate is ongoing in psychology on how to define the concept of behaviour (Reber, Reber, 2008). In the proposed

P-ER framework it would be conceptualised solely as 'the directly observable and measurable action of an individual occurring outside him or her' (Kosslyn, Rosenberg, 2006). Such an operationalisation distinguishes behaviour from behavioural intention grasped as an attitude.

Types of behaviours certainly worth name and including in the framework are: approach, avoidance, performance (of any tangible, countable activity), transforming, and sharing. These categories of behaviour are sufficient to measure the behavioural dimension of P-ER, no matter how their particularities would be manifested, e.g. approaching a building slowly, avoidance through quick flight from the building, prayer as performance, sharing by word-of-mouth recommendation of a place, etc.

4. Conclusion

The primary purpose of this disquisition was to establish the relatively universal, modern framework for person-environment interactions. In order to make such an attempt, first of all the theoretical ground presented elsewhere to date was discussed. The K. Lewin's Field Theory (1943; 1952) and its particular interpretation – A. Bandura's Doctrine of Reciprocal Determinism (Bandura 1978) were chosen as guiding theoretical backgrounds, as well as various views on people-environment relationship accepted in contemporary integral approaches (Gifford 2007). Consequently, author's original framework was proposed, and its elements described.

First, the trilateral nature of person-environment relationships (P-ER), including the person, the environment and the behaviour which are in constant bi-directional, mutual interaction was proposed. Second, interactions that create specific mental states, such as person-environment fit (P-EF), place attachment (PA), place identity (PID), place image (PI), sense of place (SOP), and place satisfaction (PS), to name only the most studied to date, were shown and described; these interactions are also affected by abovementioned mental states. Third, all critical dimensions of the person and the environment as proposed in the framework were explained, conceptualised, and their possible indicators, or even measures, were discussed, either

directly or indirectly. Finally, the behaviour was defined and its specific forms proposed to include in the framework.

The original integrative-transactional framework for studying complex person-environment interactions (PEI-ITF) proposed in this article is not the easiest approach to study P-ER. However, as it was discussed above, P-ER is incredibly multifaceted, therefore the framework for studying it must also be complex if a researcher aims not only to study this whole complexity at once, but at least to position such P-ER study in a wider theoretical context.

The PEI-ITF then seems to be a reasonably generalisable, highly usable and comprehensive conceptual tool for further people-environment research. Even if not immediately suitable to all of it (e.g. it may be not well suited for studying high-level ecological issues or highly particular settings and their specific people-related problems), it can constitute a useful basis for further considerations or for expanding it into specific dimensions, according to particular topic of people-environment relationship research. Nonetheless, it may be also used straightaway, for example as a toolbox for studying customer experience management in various retail settings (e.g. shopping streets, centres, malls), or to better focus contemporary urban design (including advanced placemaking and residential design) on people's mental processing of the environment, as well as their behaviour. It may also be immediately usable for better understanding of the human-based principles of territorial marketing and promotion, where the nature and correlates of P-EF, PID, PI, SOP and PS are of special practical importance.

Further research on the PEI-ITF itself could be carried on, especially for sharpening of the concepts, and towards better understanding of the nature of bi-directional P-E relationships (e.g. the very nature of environmental stimulation process). The proposed framework should be perfected, admittedly, as people constantly need to learn how to understand settings around the world that help to fulfil human potential and needs rather than constrain it, as R. Gifford (2007) put it. People do not need more utopias and more concepts today; there are a lot of them, only the small selection was presented in this article. There is a long way before it will be fully understandable how to create *eutopias,* i.e. 'good places', settings close to perfection but

achievable, environments of a great well-being. And until then, the integration and the critical processing of present knowledge is what people really need nowadays.

5. References

Aiello J. R., Baum A. (eds), 1979: *Residential Crowding and Design*. Boston: Springer US.

Ajzen I., Fishbein M., 2005: *The Influence of Attitudes on Behavior*; in: D. Albarracin, B. T. Johnson, M. P. Zanna (eds): *The handbook of attitudes*. Mahwah: Lawrence Erlbaum Associates Publishers; 173-222.

Albarracin D., Johnson B. T., Zanna M. P. (eds), 2005: *The handbook of attitudes*. Mahwah: Lawrence Erlbaum Associates Publishers.

Altman I., Rogoff B., 1987: *World views in psychology and environmental psychology: Trait, interactional, organismic and transactional perspectives*; in: D. Stokols, I. Altman (eds): *Handbook of environmental psychology*. New York: Wiley.

Aronson E., Wilson T. D., Akert R. M., 1997: *Psychologia społeczna. Serce i umysł*. Poznań: Wydawnictwo Zysk i S-ka.

Balling J. D., Falk J. H., 1982: *Development of Visual Preference for Natural Environments*. "Environment and Behavior", 14, 1, 5-28.

Bandura A., 1978: *The self system in reciprocal determinism*. "American Psychologist", 33, 4, 344-358.

Bańka A., 1997: *Architektura psychologicznej przestrzeni życia. Behawioralne podstawy projektowania*. Poznań: Gemini.

Bańka A., 2002: *Społeczna psychologia środowiskowa*. Warszawa: Scholar.

Barker R., 1968: *Ecological Psychology. Concepts and Methods for Studying the Environment of Human Behavior*. Stanford: Stanford University Press.

Baum A., Aiello J. R., Calesnick L. E., 1979: *Crowding and Personal Control: Social Density and the Development of Learned Helplessness*; in: J. R. Aiello, A. Baum (eds): *Residential Crowding and Design*. Boston: Springer US; 141-159.

Bechtel R. B., Churchman A. (eds), 2002: *Handbook of Environmental Psychology*. New York: J. Wiley & Sons.

Bell P. A., Greene T. C., Fisher J. D., Baum A., 2004: *Psychologia środowiskowa,* 1st edn. Gdańsk: Gdańskie Wydawnictwo Psychologiczne.

Berkowitz L., 1989: *Frustration-Aggression Hypothesis: Examination and Reformulation*. "Psychological Bulletin", 106, 1, 59-73.

Bernaldez F. G., Gallardo D., Abelló R. P., 1987: *Children's landscape preferences: From rejection to attraction*. "Journal of Environmental Psychology", 7, 2, 169-176.

Blythe M. A. (ed.), 2004: *Funology. From usability to enjoyment*. Dordrecht, Boston: Kluwer Academic Publishers.

Bogenhold D., 2001: *Social Inequality and the Sociology of Life Style: Material and Cultural Aspects of Social Stratification*. "American Journal of Economics and Sociology", 60, 4, 829-847.

Bonaiuto M., Fornara F., Bonnes M., 2003: *Indexes of perceived residential environment quality and neighbourhood attachment in urban environments: a confirmation study on the city of Rome*. "Landscape and Urban Planning", 65, 1-2, 41-52.

Boski P., 2009: *Kulturowe ramy zachowań społecznych. Podręcznik psychologii międzykulturowej*. Warszawa: Wydawnictwo Naukowe PWN; Academica Wydawnictwo SWPS.

Bowers K. S., 1973: *Situationism in psychology: An analysis and a critique*. "Psychological Review", 80, 5, 307-336.

Bryman A., 2012: *Social research methods,* 4th edn. Oxford, New York: Oxford University Press.

Brzozowski P., 2010: *Skala uczuć pozytywnych i negatywnych SUPIN. Polska adaptacja skali PANAS Davida Watsona i Lee Ann Clark: podręcznik*. Warszawa: Pracownia Testów Psychologicznych Polskiego Towarzystwa Psychologicznego.

Buss D. M., 2001: *Psychologia ewolucyjna*. Gdańsk: Gdańskie Wydawnictwo Psychologiczne.

Buss D. M., 2009: *An evolutionary formulation of person–situation interactions*. "Journal of Research in Personality", 43, 2, 241-242.

Calhoun J. B., 1962: *Population density and social pathology*. "Scientific American", 206, 2, 139-148.

Campelo A., Aitken R., Thyne M., Gnoth J., 2014: *Sense of place: the importance for destination branding*. "Journal of Travel Research", 53, 2, 154-166.

Carlston D. E. (ed.), 2014: *The oxford handbook of social cognition*. Oxford: Oxford University Press.

Carmona M., Heath T., Oc T., Tiesdell S., 2003: *Public places, urban spaces. The dimensions of urban design*. Oxford: Architectural Press.

Carnahan D., Gove W., Galle O. R., 1974: *Urbanization, population density and overcrowding: tends in the quality of life in urban America*. "Social Forces", 53.

Casakin H., Bernardo F. (eds), 2012: *The role of place identity in the perception, understanding, and design of built environments*. Oak Park: Bentham eBooks.

Chebat J. C., Michon R., 2003: *Impact of ambient odors on mall shoppers' emotions, cognition, and spending*. "Journal of Business Research", 56, 7, 529-539.

Chein I., 1954: *The environment as a determinant of behavior*. "Journal of Social Psychology", 39, 115-127.

Chlewiński Z., Balas R. (eds), 2007: *Psychologia poznawcza w trzech ostatnich dekadach XX wieku*. Gdańsk: Gdańskie Wydawnictwo Psychologiczne.

Cho Y. N., Thyroff A., Rapert M. I., Park S. Y., Lee H. J., 2013: *To be or not to be green: Exploring individualism and collectivism as antecedents of environmental behavior*. "Journal of Business Research", 66, 8, 1052-1059.

Clitheroe H. C., Stokols D., Zmuidzinas M., 1998: *Conceptualizing the context of environment and behavior*. "Journal of Environmental Psychology", 18, 1, 103-112.

Cresswell T., 2004: *Place. A short introduction*. Malden: Blackwell Pub.

Croon E. de, Sluiter J., Kuijer P. P., Frings-Dresen M., 2005: *The effect of office concepts on worker health and performance: a systematic review of the literature*. "Ergonomics", 48, 2, 119-134.

Davis J., Le B., Coy A., 2011: *Building a model of commitment to the natural environment to predict ecological behavior and willingness to sacrifice.* "Journal of Environmental Psychology", 31, 257-265.

Desmet P., 2004: *Measuring emotion: development and application of an instrument to measure emotional responses to products*; in: M. A. Blythe (ed.): *Funology. From*

usability to enjoyment; vol. 3. Dordrecht, Boston: Kluwer Academic Publishers; 111-123.

Dębek M., 2012: *Attitudes towards formally differentiated architectural objects*. "Architectus", 31, 1, 83-94.

Dębek M., 2013: *Architects and non-architects assess architecture*. "Architectus", 36, 4, 67-81.

Dębek M., Janda-Dębek B., 2012: *Temperament and perceived attractiveness of architectural objects*. "Polish Journal of Applied Psychology", 10, 1, 123-146.

Eagly A. H., Chaiken S., 2007: *The advantages of an inclusive definition of attitude*. "Social Cognition", 5, 582-602.

Easthope H., 2004: *A place called home*. "Housing, Theory and Society", 21, 3, 128-138.

Edwards J. R., 2008: *Person–Environment Fit in Organizations: An Assessment of Theoretical Progress*. "The Academy of Management Annals", 2, 1, 167-230.

El Hedhli K., Chebat J.-C., Sirgy M. J., 2013: *Shopping well-being at the mall: Construct, antecedents, and consequences*. "Journal of Business Research", 66, 7, 856-863.

Falkowski A., Tyszka T., 2009: *Psychologia zachowań konsumenckich,* 2nd edn. Gdańsk: Gdańskie Wydawnictwo Psychologiczne.

Festinger L., 1957: *A theory of cognitive dissonance*. Stanford: Stanford University Press.

Finn A., Louviere J. J., 1996: *Shopping center image, consideration, and choice: Anchor store contribution*. "Journal of Business Research", 35, 3, 241-251.

Forgas J. P., 1995: *Mood and judgment: The affect infusion model (AIM)*. "Psychological Bulletin", 117, 1, 39-66.

Foxall G., Greenley G., 1998: *The affective structure of consumer situations*. "Environment and Behavior", 30, 6, 781-798.

Freedman J. L., Klevansky S., Ehrlich P. I., 1972: *Crowding and personal control: Social density and the development of learned helplessness.* "Journal of Experimental Social Psychology", 8, 538-548.

Fried Y., 1990: *Workspace characteristics, behavioral interferences, and screening ability as joint predictors of employee reactions: An examination of the intensification approach*. "Journal of Organizational Behavior", 11, 4, 267-280.

Galindo M. P., Hidalgo M. C., 2005: *Aesthetic preferences and the attribution of meaning: Environmental categorization processes in the evaluation of urban scenes*. "International Journal of Psychology", 40, 1, 19-26.

Gärling T., Biel A., Gustafsson M., 2002: *The new environmental psychology: The human interdependence paradigm*; in: R. B. Bechtel, A. Churchman (eds): *Handbook of Environmental Psychology*. New York: J. Wiley & Sons; 85-94.

Gehl J., 2011: *Life between buildings. Using public space*. Washington: Island Press.

Genereux R. L., Ward L. M., Russell J. A., 1983: *The behavioral component in the meaning of places*. "Journal of Environmental Psychology", 3, 1, 43-55.

Gibson J. J., 1986: *The Ecological approach to visual perception*. Hillsdale: Taylor & Francis.

Gifford R., Hine D. W., Muller-Clemm W., Reynolds D. J., Shaw K. T., 2000: *Decoding modern architecture: A lens model approach for understanding the aesthetic differences of architects and laypersons*. "Environment and Behavior", 32, 2, 163-187.

Gifford R., 2007: *Environmental psychology. Principles and practice,* 4th edn.: Optimal Books.

Giza A., Sikorska M. (eds), 2012: *Współczesne społeczeństwo polskie,* 1st edn. Warszawa: Wydawnictwo Naukowe PWN.

Goodchild B., 1974: *Class Differences in Environmental Perception*. "Urban Studies", 11, 2, 59-79.

Gullone E., 2000: *The biophilia hypothesis and life in the 21st century: Increasing mental health or increasing pathology?* "Journal of Happiness Studies", 1, 3, 293-322.

Hagerhall C. M., 2001: *Consensus in landscape preference judgements*. "Journal of Environmental Psychology", 21, 1, 83-92.

Hall C. S., Campbell J. B., Gardner L., 2013: *Teorie osobowości,* 1st edn. Warszawa: Wydawnictwo Naukowe PWN.

Hart C., Stachow G., Cadogan J. W., 2013: *Conceptualising town centre image and the customer experience*. "Journal of Marketing Management", 29, 15-16, 1753-1781.

Harvey J. H. (ed), 1981: *Cognition, social behavior, and the environment*. Hillsdale: L. Erlbaum.

Hay R., 1998: *Sense of place in developmental context*. "Journal of Environmental Psychology", 18, 1, 5-29.

Hedge A., 1984: *Evidence of a relationship between office design and self-reports of ill health among office workers in the United Kingdom.* "Journal of Architectural and Planning Research", 1, 3, 163-174.

Hernández B., Martín A. M., Ruiz C., Carmen Hidalgo M. del, 2010: *The role of place identity and place attachment in breaking environmental protection laws*. "Journal of Environmental Psychology", 30, 3, 281-288.

Herzog T. R., Stark J. L., 2004: *Typicality and preference for positively and negatively valued environmental settings*. "Journal of Environmental Psychology", 24, 1, 85-92.

Hofstede G. H., 1984: *Culture's consequences. International differences in work-related values*. Beverly Hills: Sage Publications.

Homer P., Kahle L., 1988: *A structural equation test of the value-attitude-behavior hierarchy*. "Journal of personality and social psychology", 54, 4, 638-646.

Horelli L., 2006: *Environmental human-friendliness as a contextual determinant for quality of life*. "Revue européenne de psychologie appliquée", 56, 16-22.

Huisman G., Hout M. van, Dijk E. van, Geest T. van de, Heylen D., 2013: *LEMtool*; in: W. E. Mackay, S. Brewster, S. Bødker, Interaction, ACM Special Interest Group on Computer-Human (eds): *the SIGCHI Conference // Proceedings of the SIGCHI Conference on Human Factors in Computing Systems,* Paris, France; 351-360.

Jackson J. B., 1994: *A sense of place, a sense of time*. New Haven: Yale University Press.

Jacobs J., 1961: *The death and life of great American cities*. New York: Random House.

Jacyno M., 2012: *Style życia*; in: A. Giza, M. Sikorska (eds): *Współczesne społeczeństwo polskie*, 1st edn. Warszawa: Wydawnictwo Naukowe PWN; 271-312.

Jaworowska A., Matczak A., 2002: *Omnibus. Test inteligencji*. Warszawa: Pracownia Testów Psychologicznych Polskiego Towarzystwa Psychologicznego.

John O. P., Robins R. W., Pervin L. A. (eds), 2008: *Handbook of personality. Theory and research,* 3rd edn. New York: Guilford Press.

Jorgensen B. S., Stedman R. C., 2001: *Sense of place as an attitude: Lakeshore owners attitudes toward their properties*. "Journal of Environmental Psychology", 21, 3, 233-248.

Kahle L. R., 1983: *Social values and social change. Adaptation to life in America*. New York: Praeger.

Kahneman D., 2012: *Thinking, fast and slow*. London: Penguin Books.

Kalandides A., 2011: *The problem with spatial identity: revisiting the "sense of place"*. "Journal of Place Management and Development", 4, 1, 28-39.

Kaplan S., 1987: *Aesthetics, Affect, and Cognition: Environmental Preference from an Evolutionary Perspective*. "Environment and Behavior", 19, 1, 3-32.

Karan P. P., Bladen W. A., Singh G., 1980: *Slum Dwellers' and Squatters' Images of the City*. "Environment and Behavior", 12, 1, 81-100.

Kaya N., Weber M. J., 2003: *Cross-cultural differences in the perception of crowding and privacy regulation: American and Turkish students*. "Journal of Environmental Psychology", 23, 3, 301-309.

Kellert S. R., Wilson E. O. (eds), 1995: *The Biophila Hypothesis*. Covelo, Calif: Island Press.

Ke-Tsung H., 2006: *A reliable and valid self-rating measure of the restorative quality of natural environments*. "Landscape and Urban Planning", 64, 209-232.

Kihlstrom J. F., 2014: *The Person-Situation Interaction*; in: D.E. Carlston (ed): *The oxford handbook of social cognition*. Oxford: Oxford University Press; 786-805. http://socrates.berkeley.edu/~kihlstrm/PxSInteraction.htm.

Killgore W., 1998: *The affect grid: a moderately valid, nonspecific measure of pleasure and arousal*. "Psychological Reports", 83, 6, 639-642.

Knapp M. L., Hall J. A., 2000: *Komunikacja niewerbalna w interakcjach międzyludzkich*. Wrocław: Astrum.

Knez I., 2001: *Effects of colour of light on nonvisual psychological processes*. "Journal of Environmental Psychology", 21, 2, 201-208.

Knox P. L., 1982: *Symbolism, styles and settings: the built environment and the imperatives of urbanized capitalism: Symbolism, styles and settings: the built environment and*

the imperatives of urbanized capitalism. "Architecture & Comportement/Architecture & Behaviour", 2, 2, 107-122.

Korpela K., Hartig T., 1996: *Restorative qualities of favorite places*. "Journal of Environmental Psychology", 16, 3, 221-233.

Kosslyn S. M., Rosenberg R. S., 2006: *Psychologia. Mózg, człowiek, świat*. Kraków: Wydawnictwo Znak.

Kotler P., Armstrong G., Harris L. C., Piercy N., 2013: *Principles of marketing,* 6th edn. Harlow: Pearson.

Krupat E., 1985: *People in cities. The urban environment and its effects*. Cambridge, New York: Cambridge University Press.

Lalli M., 1992: *Urban-related identity: Theory, measurement, and empirical findings*. "Journal of Environmental Psychology", 12, 4, 285-303.

Landy F. J., Conte J. M., 2010: *Work in the 21st century. An introduction to industrial and organizational psychology,* 3rd edn. Malden: Wiley-Blackwell.

LeDoux J. E., 2000: *Mózg emocjonalny. Tajemnicze podstawy życia emocjonalnego*. Poznań: Media Rodzina.

Lenartowicz J. K., 2010: *Słownik psychologii architektury. Podręcznik dla studentów architektury,* 4th edn. Kraków: Politechnika Krakowska im. T. Kościuszki. Katedra Architektury Środowiskowej A25 WAPK.

Lengen C., Kistemann T., 2012: *Sense of place and place identity: Review of neuroscientific evidence*. "Health & Place", 18, 5, 1162-1171.

Lewicka M., 2005: *Ways to make people active: The role of place attachment, cultural capital, and neighborhood ties*. "Journal of Environmental Psychology", 25, 4, 381-395.

Lewicka M., 2008: *Place attachment, place identity, and place memory: Restoring the forgotten city past*. "Journal of Environmental Psychology", 28, 3, 209-231.

Lewicka M., 2011: *Place attachment: How far have we come in the last 40 years?* "Journal of Environmental Psychology", 31, 3, 207-230.

Lewicka M., 2012: *Psychologia miejsca*. Warszawa: Wydawnictwo Naukowe Scholar.

Lewin K., 1943: *Defining the 'field at a given time.* "Psychological Review", 50, 3, 292-310.

Lewin K., 1952: *Field theory in social science. selected theoretical papers*. London: Tavistock.

Lopez-Mosquera N., Sanchez M., 2011: *Emotional and satisfaction benefits to visitors as explanatory factors in the monetary evaluation of environmental goods: An application to periurban green spaces*. "Land Use Policy", 28, 151-166.

Lynch K., 1960: *The image of the city*. Cambridge: MIT Press.

Mackay W. E., Brewster S., Bødker S., Interaction, ACM Special Interest Group on Computer-Human (eds), 2013: *the SIGCHI Conference // Proceedings of the SIGCHI Conference on Human Factors in Computing Systems*: ACM.

Maller C., 2005: *Healthy nature healthy people: 'contact with nature' as an upstream health promotion intervention for populations*. "Health Promotion International", 21, 1, 45-54.

Manzo L., Devine-Wright P. (eds), 2014: *Place attachment. Advances in theory, methods, and applications*: New York: Routledge.

Maruszewski T., Doliński D., Łukaszewski W., Marszał-Wiśniewska M., 2008: *Emocje i motywacja*; in: J. Strelau, D. Doliński (eds): *Psychologia.* Podręcznik akademicki. Gdańsk: Gdańskie Wydawnictwo Psychologiczne; 511-649.

McCrae R. R., Costa P. T., 2008: *The Five-Factor Theory of Personality*; in: O. P. John, R. W. Robins, L. A. Pervin (eds): *Handbook of personality.* Theory and research, 3rd edn. New York: Guilford Press; 159-180.

McCrae R. R., Costa P. T., 2010: *NEO Inventories: Professional manual.* Lutz, FL: Psychological Assessment Resources.

McKechnie G. E., 1974: *ERI Manual: Environmental response inventory.* Berkley: Consulting Psychologists Press;
http://www.conpsychmeasures.com/scales/ERI.html.

McKechnie G. E., 1977: *The environmental response inventory in application*. "Environment and Behavior", 9, 2, 255-276.

Mealey L., Theis P., 1995: *The relationship between mood and preferences among natural landscapes: An evolutionary perspective*. "Ethology and Sociobiology", 16, 3, 247-256.

Mehta R., 2013: *Understanding perceived retail crowding: A critical review and research agenda*. "Journal of Retailing and Consumer Services", 20, 6, 642-649.

Minsky M., 2007: *Teoria systemu schematów*; in: Z. Chlewiński, R. Balas (eds): *Psychologia poznawcza w trzech ostatnich dekadach XX wieku*. Gdańsk: Gdańskie Wydawnictwo Psychologiczne; 282-306.

Mitchell A., 1984: *The nine American lifestyles. Who we are and where we're going*. New York: Warner Books.

Montgomery J., 1998: *Making a City: Urbanity, Vitality and Urban Design*. "Journal of Urban Design", 3, 93-116.

Moslemi M., Ayvazian S., 2014: *Study Joint Elements between Creation 'Sense of Place' and 'Place Attachment'*. "Advances in Environmental Biology", 8, 7, 2202-2210.

Nasar J. L., 1987: *Environmental correlates of evaluative appraisals of central business district scenes*. "Landscape and Urban Planning", 14, 117-130.

Nasar J. L., 1987: *The Effect of Sign Complexity and Coherence on the Perceived Quality of Retail Scenes*. "Journal of the American Planning Association", 53, 4, 499-509.

Nasar J. L., 1994: *Urban design aesthetics: The evaluative qualities of building exteriors*. "Environment and Behavior", 26, 377-401.

Nevid J. S., 2009: *Psychology. Concepts and applications,* 3rd edn. Boston: Houghton Mifflin Co.

Newbery P., Farnham K., 2013: *Experience Design. A framework for Integrating Brand, Experience, and Value*. New Jersey: John Wiley & Sons.

Oldenburg R., 1999: *The great good place. Cafés, coffee shops, bookstores, bars, hair salons, and other hangouts at the heart of a community,* 2nd edn. Cambridge: Da Capo Press.

Oleszkiewicz-Zsurzs E., 1985: *Adaptacja skali poszukiwania wrażeń (Sensation Seeking Scale) M. Zuckermana do warunków polskich*. "Przegląd Psychologiczny", 4.

Oxford Dictionaries, 2014: "*environment [def.2]*". *Oxford Dictionaries*: Oxford University Press;
http://www.oxforddictionaries.com/definition/english/environment.

Pallasmaa J., 2012: *Oczy skóry. Architektura i zmysły*. Kraków: Instytut Architektury.

Plummer J., 1974: *The concept and application of life style segmentation*. "Journal of Marketing", 38, 33-37.

Porteous J. D., 1996: *Environmental aesthetics. Ideas, politics and planning*. London: Routledge.

Presseau J., Sniehotta F., Francis J., Little B., 2008: *Personal projects analysis: Opportunities and implications for multiple goal assessment, theoretical integration, and behaviour change*. "The European Health Psychologist", 10, 32-36.

Punter J., 1991: *Participation in the design of urban space*. "Landscape design", 200, 24-27.

Ramkissoon H., Smith L. D. G., Weiler B., 2013: *Testing the dimensionality of place attachment and its relationships with place satisfaction and pro-environmental behaviours: A structural equation modelling approach*. "Tourism Management", 36, 552-566.

Rapoport A., 1990: *The meaning of the built environment. A nonverbal communication approach*. Tucson: University of Arizona Press.

Reber A. S., Reber E. S., 2008: *Słownik psychologii,* 3rd edn. Warszawa: Wydawnictwo Naukowe "Scholar".

Rokeach M., 1973: *The nature of human values*. New York: Free Press. https://openlibrary.org/books/OL5309153M/The_nature_of_human_values.

Russell J. A., Ward L. M., Pratt G., 1981: *Affective quality attributed to environments: A factor analytic study*. "Environment and Behavior", 13, 3, 259-288.

Russell J. A., 1980: *A circumplex model of affect*. "Journal of personality and social psychology", 39, 6, 1161-1178.

Russell J. A., Weiss A., Mendelsohn G. A., 1989: *Affect Grid: A single-item scale of pleasure and arousal*. "Journal of personality and social psychology", 57, 3, 493-502.

Sarason I. G., Spielberger C. D. (eds), 1979: *Stress and anxiety*. New York: John Wiley.

Scannell L., Gifford R., 2010: *Defining place attachment: A tripartite organizing framework*. "Journal of Environmental Psychology", 30, 1, 1-10.

Schultz D. P., Schultz S. E., 2008: *Historia współczesnej psychologii*. Kraków: Wydawnictwo Uniwersytetu Jagiellońskiego.

Schwartz S. H., 1994: *Are there universal aspects in the structure and contents of human values?* "Journal of Social Issues", 50, 4, 19-45.

Seamon D., 2012: *Place, place identity and phenomenology: A triadic interpretation based on j.g. bennett's systematics*; in: H. Casakin, F. Bernardo (eds): *The role of place identity in the perception, understanding, and design of built environments*. Oak Park: Bentham eBooks.

Smith K., 2011: *The relationship between residential satisfaction, sense of community, sense of belonging and sense of place in a western Australian urban planned community*: Doctoral Thesis, Faculty of Computing, Health & Science, Edith Cowan University.

Spencer-Oatey H., 2012: *What is culture? A compilation of quotations.,* Global PAD Core Concepts. http://go.warwick.ac.uk/globalpadintercultural.

Spencer-Oatey H., 2008: *Culturally speaking. Managing rapport in talk across cultures,* 2nd edn. London: Continuum.

Srinivasan T., 1987: *A study of mental health of the adolescents in relation to geographical environments.* "Child Psychiatry Quarterly", 20, 2, 55-60.

Staats H., Kieviet A., Hartig T., 2003: *Where to recover from attentional fatigue preference: An expectancy-value analysis of environmental*. "Journal of Environmental Psychology", 23, 2, 147-157.

Stachow G., Hart C., 2010: *Exploring place image: Formation and measurement*. "Place Branding & Public Diplomacy", 6, 2, 145-155.

Stamps A. E., 1999: *Physical determinants of preferences for residential facades*. "Environment and Behavior", 31, 6, 723-751.

Stamps A. E., 1991: *Public preferences for high rise buildings: stylistic and demographic effects*. "Perceptual and Motor Skills", 72, 3, 839-844.

Stamps A. E., Nasar J. L., 1997: *Design review and public preferences: effects of geographical location, public consensus, sensation seeking, and architectural styles*. "Journal of Environmental Psychology", 17, 1, 11-32.

Stedman R. C., 2002: *Toward a social psychology of place: Predicting behavior from place-based cognitions, attitude, and identity*. "Environment and Behavior", 34, 5, 561-581.

Stern E., Krakover S., 1993: *The formation of a composite urban image*. "Geographica Analysis", 25, 2.

Sternberg R. J., 2001: *Psychologia poznawcza*. Warszawa: Wydawnictwa Szkolne i Pedagogiczne.

Stokols D., 1979: *A congruence analysis of human stress*; in: I. G. Sarason, C. D. Spielberger (eds): *Stress and anxiety*. New York: John Wiley; 35-64.

Stokols D., Altman I. (eds), 1987: *Handbook of environmental psychology*. New York: Wiley.

Stokols D., Shumaker S. A., 1981: *People in places: A transactional view of settings*; in: J. H. Harvey (ed): *Cognition, social behavior, and the environment*. Hillsdale: L. Erlbaum.

Strelau J., Doliński D. (eds), 2008: *Psychologia. Podręcznik akademicki*. Gdańsk: Gdańskie Wydawnictwo Psychologiczne.

Strelau J., Zawadzki B., 2008: *Psychologia różnic indywidualnych*; in: J. Strelau, D. Doliński (eds): *Psychologia.* Podręcznik akademicki; vol. 1. Gdańsk: Gdańskie Wydawnictwo Psychologiczne; 766-846.

Summers D. (ed.), 2005: *Longman dictionary of contemporary English. Environment,* 4th edn. München: Langenscheidt-Longman.

Swinyard W. R., 1998: *Shopping mall customer values: the national mall shopper and the list of values*. "Journal of Retailing and Consumer Services", 5, 3, 167-172.

Tatarkiewicz W., 1981: *Historia filozofii,* 9th edn. Warszawa: Państwowe Wydaw. Naukowe.

Telci E. E., 2013: *High shopping mall patronage: is there a dark side?* "Quality & Quantity", 47, 5, 2517-2528.

Tolman E. C., 1938: *The Determiners of Behavior at a Choice Point*. "Psychological Review", 45, 1-41.

Tuan Y.-F., 1977: *Space and Place: The Perspective of Experience.* Minneapolis: University of Minnesota Press.

Turnbull C. M., 1961: *Some observations regarding the experiences and behavior of the BaMbuti pygmies*. "The American Journal of Psychology", 74, 304-308.

Ulrich R. S., 1995: *Biophilia, biophobia, and natural landscapes*; in: S. R. Kellert, E. O. Wilson (eds): *The Biophila Hypothesis*. Covelo, Calif: Island Press; 73-137.

Wallenius M., 1999: *Personal projects in everyday places: perceived supportiveness of the environment and psychological well-being*. "Journal of Environmental Psychology", 19, 2, 131-143.

Watson D., Clark L. A., Tellegen A., 1988: *Development and validation of brief measures of positive and negative affect: The PANAS scales*. "Journal of personality and social psychology", 54, 6, 1063-1070.

Weinstein N. D., 1980: *Individual differences in critical tendencies and noise annoyance*. "Journal of Sound and Vibration", 68, 2, 241-248.

Whyte W. H., 1980: *The social life of small urban spaces*. New York: Project for Public Spaces.

Wilson E. O., 1984: *Biophilia*. Cambridge: Harvard University Press.

Wohlwill J. F., 1966: *The Physical Environment: A Problem for a Psychology of Stimulation*. "Journal of Social Issues", 22, 4, 29-38.

Wohlwill J. F., 2008: *The visual impact of development in coastal zone areas*. "Coastal Zone Management Journal", 9, 3-4, 225-248.

Wojciszke B., 2006: *Człowiek wśród ludzi. Zarys psychologii społecznej,* 3rd edn. Warszawa: Wydawnictwo Naukowe Scholar.

Wojciszke B., 2011: *Psychologia społeczna*. Warszawa: Wydawnictwo Naukowe Scholar.

World Health Organization, 1998: *WHOQOL User Manual,* 1st edn. Geneva.

Zawadzki B., Strelau J., Szczepaniak P., Śliwińska M., 1998: *Inwentarz Osobowości NEO-FFI Paula T. Costy Jr i Roberta McCrae*. Warszawa: Pracownia Testów Psychologicznych Polskiego Towarzystwa Psychologicznego.

Zeisel J., 2006: *Inquiry by design. Environment/behavior/neuroscience in architecture, interiors, landscape, and planning*. New York: W.W. Norton & Co.

Zuckerman M., 1984: *Sensation seeking: A comparative approach to a human trait.* "Behavioral and Brain", 7, 413-471.

Zuckerman M., 1994: *Behavioral expressions and biosocial bases of sensation seeking*. New York: Cambridge Press.

Zuckerman M., Eysenck S. B., Eysenck H. J., 1978: *Sensation seeking in England and America: Cross-cultural, age, and sex comparisons*. "Journal of Consulting and Clinical Psychology", 46, 1, 139-149.

Zuckerman, M., Ulrich, R., McLaughlin, J., 1993: *Sensation seeking and reactions to nature paintings.* "Personality and Individual Differences", 15, 5, 563-576.

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