

# Nexus between Human Values and Overall Satisfaction with the Urban Environment. A Non-Linear Partial Least Square Path Modeling. Argentine Cities Case

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## Abstract

In this paper, we examine the relationship between Human Values and the Urban Environment, and how values are behaviorally instantiated in different environments, through Non-Linear Structural Equation Model based on Partial Least Square. Beginning with a unified framework of the study of values, we analyze its organization, antecedents, covariates and presumed consequences that emerge from the data. Schwartz Model is used because it has a coherent and flexible structure with the measure instrument that has been evolved. Ten categories of Human Values and two dimensions are used to evaluate the Urban Environment. We will prove that the Human Value Conservation, through the dimensions: Conformity, Security and Tradition depends on the perceptions of the Urban Environment, specifically on the dimension Consumption/Esthetic & Social Cohesion. We postulate tentatively that the Human Value Self-Enhancement, through the subdimensions Achievement and Power, it is a variable, which

in short and long time, impacts on the Perception of the Urban Environment, specifically on the Perception of the System of Generation and Distribution of Habitat Resource.

**Keywords:** Human values, Perception of the System of Generation and Distribution of Habitat Resource, Non-Linear Partial Least Square Path Modeling, Overall satisfaction, Urban Environment, Job opportunities

## 1. Introduction

Human values are cultural and psychological mechanisms of accumulation of collective knowledge selected by the success in strengthening the reproduction of the group (Pinker, 2003), that are transformed in motivational goals that influence attitudes, behaviors and evaluations (Fischer & Boer, 2016). Human values represent the responses that individuals and groups must give with three universal requirements:

- 1). The needs of people in their capacity as biological beings.
- 2). The coordination of social actions.
- 3). Survival and proper functioning of the groups (Schwartz, 2006).

These psychological mechanisms are the product of evolution and the interaction with the environment, where the values and preferences of the people arise (Kanazawa, 2009).

A gradual change in behavior allowed individuals to cope with different environmental conditions. Human values represent these psychological solutions that appealed humans, to face the challenges presented by the environment. Selective pressures imposed by the environment that promotes certain local characteristics are more adaptable than others (Newson et al., 2005). Systematically residents differ in both physiology and behavior, in fact, certain ecological characteristics exist that favor a strategy over another, and contribute differently to the structure and functioning of human psychology (O'Brien, 2012). Therefore, human values are motivational goals that influence attitudes, behavior and perceptions of the environment. There are personal, cultural variations, not in the structure of values but in the way that they interrelate, priorities, the intensity with which these values relate to the attitudes, behaviors or events of daily life and personal well-being (Fischer et al., 2016; Lindenberg, 1996).

## 2. Background

### 2.1 Schwartz Human Values

The analysis of value orientation of individuals from the conceptualizations of Schwartz (1992, 2001) that have empirical support for a classification of human values, verified in more than 60 countries will be taken, then extended to nineteen (Schwartz et al., 2012). In this article, we will work with the initial structure of ten values: Power, Achievement, Hedonism, Stimulation, Self-Determination, Universalism, Benevolence, Tradition, Conformity and Security, which are organized into four polarities of Self-promotion; Self-transcendence, Openness to change and Conservation.

Theory expresses both motivations of opposite values together with values that are a continuum of related reasons. This results in a continuous circle structure. The nature of this continuum emphasizes the shared motivation types of values adjacent and nonadjacent that represent opposite types of values (Schwartz, 1992; 2001).

The value structure that is used at the individual level can be applied to cultures and societies. Social values are based on aggregated data at the individual level, and the same dimensions for individuals and societies are used. The structures at the individual level are replicated at the social level and the use of a single theoretical values organization allows a consistent and parsimonious study of cultural similarities and differences. (Inglehart et al., 2000; Wetzel, 2014; House et al., 2004; Fischer, 2010, 2012, 2013).

### *2.2 Overall Satisfaction with the City*

The Overall satisfaction with the urban environment is described by four main factors: Urbanity and Diversity, Nature and Recreation, Job Opportunities and Cost-Efficiency. These four factors allow us to infer the sense of attachment to a place and the satisfaction of the citizens with their area of residence. They are relevant to the determination of possible sites that are pleasant (Zenker et al., 2014). They explain 50% of the total variance of the satisfaction of citizens (Zenker et al., 2013; Nigro & González Císaro, 2016; Zenker & Gollan, 2010). In our case two constructs are used, based on three of the four factors: a) Perception of Generation and Distribution of Habitat Resources measured through the Job Opportunities and cost-efficiency, and b) Perception of Consumption / Esthetics & Social Cohesion measured through Urbanity and Diversity. Perception of Generation and Distribution of Habitat Resources is based on the accumulation of Physical capital from strictly economic objectives (Kanazawa, 2009), measures the perception of the Habitat as a facilitator of accumulation of Physical Capital. Consumption / Esthetics & Social Cohesion measure the perception of the Habitat as a facilitator of accumulation of Social Capital, the perception of the collective group ability to manage their social relationships, and tranquility for the development of everyday life with a variety of consumer goods and services. The Social Capital defines the resources generated from the relationships between individuals (Bourdieu et al., 1973, Bourdieu, 1984). Human beings are social only when and where they can reach reproductive success, but not otherwise. It is counted as capital only those relationships that directly or indirectly promote reproductive success of the individual (Kanazawa, 2010; Nigro & González Císaro, 2016). This factor can include the concepts of Collective efficacy and / or Self-efficacy defined as the ability of the society to effectively achieve its objectives using these resources (Morenoff et al., 2001; Bandura, 1977). Regarding esthetics, there is evidence about the role of the architectural beauty of the urban environment in the accumulation of social capital (Dutton, 2003; Nigro & González Císaro, 2016).

### **3. The Research**

The employed methodology involves the construction of a causal theoretical model that follows a series of steps that connect the empirical context (data) with the same theoretical representation (model from reality). This model attempts to explain the relations between the

latent variables included in the structural equation model from background knowledge inspired in the evolution of social sciences.

### *3.1 Sample Description*

The research was developed on a general population with over 16 years of habitual residence in the places where was conducted the survey; the chosen cities were Tandil and Tres Arroyos at the Province of Buenos Aires, Argentina. A probabilistic sampling by cluster design, whose sampling error is +/- 4.7% with a significance level of 95%, was employed; 438 cases were performed in a personal way. The sample can be considered fully representative of the population as the National census in Argentina in 2010. The survey was performed during December 2013 and January-February 2014. From 438 cases mentioned 50.1% were women. The same number of surveys was taken in both cities, with an average age of 44.1 years (SD = 18.8). Regarding the socioeconomic level, 7% of the sample is High, 47% and 46% are Medium Low. The educational level, 17% of the sample has completed tertiary or university education, 34% has achieved an average educational level, i.e., they have at least completed high school and 48% have completed primary at the most.

The survey respondents were asked about the level of satisfaction that they have with the different dimensions of the city, based on the instruction: I want you to qualify from 1 to 10 the different characteristics of the city in terms of Very Unsatisfied, Unsatisfied, Neither satisfied nor unsatisfied, Satisfied, Very Satisfied. The items were measured with a Likert scale from 1 (Very Unsatisfied) to 10 (Very Satisfied).

As a method for the evaluation of the values, the survey respondents were exposed to a series of grouped stimuli in a set of stages, where imaginary subjects are protagonists, to which they have to indicate the level of adhesion

The measure version of the values that we used in this article is the PVQ of Schwartz (Shwartz et al., 2001), a PVQ adaptation of 40 items. The survey respondents answered to the instruction: "Next we will describe briefly some people. Please, read each description and think how much these persons resemble you or not. (1) He doesn't resemble me at all, (2-3) He doesn't resemble me (4-5) He resembles me very little (6-7) He resembles me a little (8-9) He rather resembles me (10) He resembles me a lot. At the end of the questionnaire we asked about sociodemographic attributes, Age, Educational Level and Incomes, and we recorded the Urbanization Level of the surveyed neighborhood.

### *3.2 Descriptive Statistics*

Tables 1 to 3 show descriptive statistics for the sample.

Table 1. Descriptive statistics of the dimensions that evaluate the area of residence. Urbanity and Diversity, Job Opportunities and Cost- Efficiency Relationship

Items	Mean	Standard Deviation
<i>Urbanity and Diversity: metropolitan and urban characteristics of the place of residence. A city with a wide range of opportunities, cultural events or availability of consumption and services. This factor describes a place, open and tolerant to diverse cultures and subcultures.</i>		
Quantity and quality of cultural activities that take place in the city (theater, nightlife, etc.)	6.9	2.0
Cultural diversity, variety of cultural events	6.7	1.8
Openness and tolerance of the citizens	5.8	1.9
Coexistence, environment and positive energy transmitted by the city	7.0	1.7
Availability of different services	7.3	1.9
Variety of shopping opportunities	7.2	1.9
Degree of satisfaction with the urban visual image transmitted by the city	7.7	1.7
<i>Job Opportunities: It refers to all those factors related to the satisfaction with the Job Opportunities offered by the city, as well as the general level of wages.</i>		
General economic growth in the region.	7.8	1.6
Existence and promotion of good jobs and job opportunities.	6.3	2.0
The general level of wages.	5.6	1.8
<i>Cost / Efficiency ratio, profitability: Perception of the cost of living of the place.</i>		
Availability of apartments and houses.	5.8	2.3
Housing market / Cost of hiring or renting.	4.4	2.1
The general price level of the city / Cost of living.	4.6	2.1

The Dimension “Nature and Recreation” is not related to any Human Value, and therefore we did not decide to include it in the Model, as well as a second order construct that encompassed the initially latent variables of the first order Job Opportunities and Cost Efficiency Relationship, such as Perception of the Generation and Distribution of Habitat Resources (Nigro & González Císaro, 2016)

Table 2. Descriptive statistics, PVQ Schwartz (2001).

	Mean	(SD)
<b>CONSERVATION-SECURITY</b>		
5. Living in safe places. To avoid anything that could jeopardize your safety.	7.88	2.29
14. It is very important for him / her that the Government guarantee him security against any threat. He wants the state to be strong so that it can defend its citizens.	8.53	1.82
21. He cares about things that are in order and clean. He does not like things to be a mess.	7.89	2.00
31. He is very careful of not getting sick. For him / her it is very important to stay healthy.	8.03	1.98
35. It is important for him / her that the government is stable. He is concerned about the maintenance of the social order.	8.58	1.49
<b>CONSERVATION-CONFORMITY</b>		
7. Do you believe that people should do what they are told? Do you believe that people should follow rules at all times, even when no one is watching?	4.91	2.69
16. It is important for him / her to always behave correctly. He tries to avoid doing anything that others think is wrong.	7.15	2.46
28. He believes that he must always respect his parents and the elderly. It is important for him / her to be obedient.	8.31	1.70
36. It is important to always be kind to everyone. He tries not to disturb or irritate others.	7.93	1.97
<b>CONSERVATION-TRADITION</b>		
9. He / she thinks it is important not to ask for more than he/she has. He believes that people should be satisfied with what they have.	6.48	2.61
20. Religious beliefs are important to him / her. He tries to do what his religion tells him to do.	5.57	2.89
25. Believes that it is better to do things in the traditional way. It is important for him / her to keep the customs he has learned.	6.50	2.24
38. It is important for him / her to be humble and modest. He tries not to attract attention.	7.96	1.91
<b>SELF-TRANSCENDENCE-BENEVOLENCE</b>		
12. It is very important for him / her to help the people around him / her. He cares about the welfare of others.	8.85	1.35
18. It is important for him / her to be loyal to their friends. He is totally given to people close to him / her.	8.62	1.57
27. It is important for him / her to respond to the needs of others. He tries to support those he knows.	8.63	1.26
33. For he / she it is important to forgive people who have hurt them. He tries to see the good in them and do not resent them.	7.06	2.27
<b>SELF-TRANSCENDENCE-UNIVERSALISM</b>		

3. He thinks it is important that all individuals in the world are treated equally. He believes that everyone should have the same opportunities in life.	8.50	1.86
8. It seems important to listen to people who are different from him / her. Even when he disagrees with them, he still wants to understand them.	7.87	1.88
19. He strongly believes that people should protect nature. It is important to take care of the environment.	8.65	1.55
23. He believes that all the inhabitants of the Earth should live in harmony. For him / her it is important to promote peace among all groups in the world.	8.62	1.46
29. He wants everyone to be treated fairly, including people he does not know. It is important to protect the weakest.	8.67	1.48
40. It is important for him / her to adapt to Nature. He believes that people should not change Nature.	7.98	1.80
<b>OPENNESS TO CHANGE-SELF-DETERMINATION</b>		
1. Having new ideas is important to him / her. He likes to do things in his own original way.	7.34	2.05
11. It is important for him / her to make his /her own decisions about what he/she does. He likes to have the freedom to plan and choose for himself / her activities, and not to depend on others.	8.62	1.66
22. He believes that it is important to be interested in things. He likes to be curious and tries to understand all sorts of things.	7.56	1.88
34. It is important for him / her to be independent. He likes to manage on his own.	8.56	1.59
<b>OPENNESS TO CHANGE- STIMULATION</b>		
6. He / she thinks it is important to do many different things in life. He always seeks to experience new things.	7.30	2.23
15. He likes to take risks. He is always looking for adventure.	5.52	2.70
30. He likes surprises. Having a life full of emotions is important to him / her	7.44	1.97
<b>OPENNESS TO CHANGE- HEDONISM</b>		
10. He finds any opportunity to have fun. For him / her it is important to do things that please him / her.	7.33	2.38
26. Enjoying the pleasures of life is important to him / her. He likes to “indulge” himself.	7.70	1.85
<b>37. He / she really wants to enjoy life. Having a good time is very important for him / her.</b>	8.39	1.59
<b>SELF-GROWTH - POWER</b>		
2. It is important for him / her to be rich. He wants to have lots of money and expensive things.	3.07	2.33
17. It is important for him / her to tell others what to do. He wants people to do what he tells them.	3.93	2.46
39. He / she always wants to be the one who makes the decisions. He likes to be a leader.	5.85	2.41
<b>SELF-GROWTH - ACHIEVEMENT</b>		
4. For him / her it is very important to show his/her skills. He wants people to admire him for what he does.	5.54	2.67

13. It is very important for him / her to be a successful person. He likes to impress people and that people recognize his accomplishments.	5.16	2.62
24. He thinks that is important to be ambitious. He wants to show how capable he is.	4.53	2.40
32. Progressing in life is important to him / her. He strives to be better than others.	6.82	2.31

Table 3. Pearson correlations of the ten values with Age, Gender, Education and Socioeconomic Level

	Age	Gender (Female)	Education	Socioeconomic- Level
<b>Security</b>	.284**	.112*	-.057	-.032
<b>Conformity</b>	.218**	.009	-.075	-.023
<b>Tradition</b>	.292**	.111*	-.250**	-.189**
<b>Benevolence</b>	.115*	.077	.076	-.027
<b>Universalism</b>	.148**	.098*	.174**	.037
<b>Self-Direction</b>	.055	.011	.237**	.095*
<b>Stimulation</b>	-.209**	-.022	.138**	.068
<b>Hedonism</b>	-.105*	.013	.072	.085
<b>Achievement</b>	-.061	-.063	.032	.093
<b>Power</b>	.012	-.142**	.010	.107*

\*\* . correlation is significant at label 0.01 (bilateral). \* . correlation is significant at 0.05 (bilateral).

#### 4. Model and Main Results

The objective sought by the PLS (Partial Least Square) modeling is to predict (both latent and manifest) dependent variables. This goal is translated to maximize the explained variance ( $R^2$ ) of the dependent variables, which leads us to deduce that the estimates of the parameters are based on the ability to minimize the residual variances of endogenous variables. This type of model is more suitable for applications prediction (Anderson & Gerbing, 1988; Chin et al., 2003; Barclay et al., 1995) that require a certain exploratory theoretical development (Wold, 1979). They can also be used for theoretical confirmation through confirmatory analysis.

The SEM algorithm of Warp3 PLS regression is used for analysis selecting a Bootstrapping as sampling method. The Warp3 PLS algorithm tries to identify a relationship defined by a function whose first derivative is a curve U. This relationship follows a pattern that resembles more closely a curve that approaches an S, and it can be a combination of a U linked to two curves, one of which is inverted (Kock, 2013).



#### *4.1 First-order Latent Variables*

The first-order latent variables corresponding to each human value are calculated, a total of ten, and the loads of the manifest variables corresponding to each item are verified so they result greater than 0.5.

Therefore, the items 7 and 33 are removed. Item 7, “Do you believe that people should do what they are told? Do you believe that people should follow rules at all times, even when no one is watching?”, corresponding to Human Value Compliance. Item 33 “For he / she is important to forgive people who have hurt you. Try to see the good in them and do not resent them.” corresponding to Human Value Benevolence.

Table 4. Combined and transverse loadings. Loadings are without rotating. The transverse loadings have oblique rotation

	SelfDir	Estimul	Hedonis	Power	Achievie	Securit	Conform	Traditi	Benevol	Univers	Type (a	SE	P value
Ítem 1	0.702	0.040	-0.170	-0.074	0.043	-0.086	-0.033	0.025	0.019	0.126	Reflect	0.044	<0.001
Ítem 11	0.665	-0.051	0.066	0.129	-0.086	0.008	-0.045	0.008	0.027	-0.081	Reflect	0.044	<0.001
Ítem 22	0.594	0.100	0.040	-0.134	0.098	0.157	0.036	-0.131	-0.028	0.127	Reflect	0.044	<0.001
Ítem 34	0.689	-0.077	0.076	0.066	-0.045	-0.055	0.046	0.079	-0.021	-0.160	Reflect	0.044	<0.001
Ítem 6	0.181	0.766	-0.218	-0.098	-0.018	-0.127	0.193	-0.030	0.059	0.001	Reflect	0.043	<0.001
Ítem 15	-0.052	0.748	0.053	0.197	-0.045	-0.105	-0.049	-0.025	-0.177	0.137	Reflect	0.043	<0.001
Ítem 30	-0.140	0.710	0.180	-0.102	0.067	0.248	-0.157	0.059	0.123	-0.145	Reflect	0.044	<0.001
Ítem 10	0.017	0.133	0.729	-0.036	-0.057	-0.065	-0.053	0.027	-0.079	-0.031	Reflect	0.043	<0.001
Ítem 26	0.011	-0.054	0.758	0.013	0.057	0.105	-0.158	0.032	0.031	-0.086	Reflect	0.043	<0.001
Ítem 37	-0.025	-0.068	0.833	0.019	-0.001	-0.039	0.191	-0.053	0.041	0.106	Reflect	0.043	<0.001
Ítem 2	-0.036	0.122	-0.026	0.545	0.259	0.124	0.028	-0.309	-0.061	-0.139	Reflect	0.044	<0.001
Ítem 17	-0.039	-0.158	0.088	0.776	-0.034	-0.056	0.081	0.180	-0.158	0.140	Reflect	0.043	<0.001
Ítem 39	0.070	0.078	-0.076	0.714	-0.161	-0.034	-0.110	0.041	0.219	-0.046	Reflect	0.044	<0.001
Ítem 4	0.021	-0.035	-0.144	-0.063	0.733	-0.113	0.050	0.041	0.086	0.094	Reflect	0.043	<0.001
Ítem 13	0.037	-0.002	-0.033	-0.046	0.812	0.013	-0.027	0.081	-0.019	-0.047	Reflect	0.043	<0.001
Ítem 24	-0.009	-0.001	0.025	0.155	0.690	0.028	-0.204	-0.128	-0.040	0.054	Reflect	0.044	<0.001
Ítem 32	-0.069	0.050	0.207	-0.041	0.559	0.095	0.225	-0.013	-0.036	-0.123	Reflect	0.044	<0.001
Ítem 5	-0.042	0.209	-0.318	-0.016	0.175	0.665	0.024	0.025	0.115	-0.304	Reflect	0.044	<0.001
Ítem 14	-0.146	-0.072	0.130	-0.008	-0.051	0.745	-0.097	-0.196	0.103	0.044	Reflect	0.043	<0.001
Ítem 21	0.182	0.088	-0.100	0.018	-0.093	0.575	0.223	0.251	-0.172	0.056	Reflect	0.044	<0.001
Ítem 31	0.046	-0.076	0.050	-0.030	0.141	0.595	-0.061	0.203	-0.029	0.024	Reflect	0.044	<0.001
Ítem 35	0.006	-0.125	0.197	0.034	-0.151	0.724	-0.049	-0.188	-0.051	0.169	Reflect	0.043	<0.001
Ítem 7	-0.220	0.236	-0.330	0.341	0.023	0.064	0.213	0.191	0.028	-0.032	Reflect	0.046	<0.001
Ítem 16	0.059	0.040	-0.132	-0.038	0.035	-0.074	0.775	-0.007	0.030	-0.266	Reflect	0.043	<0.001
Ítem 28	0.045	0.024	0.030	0.046	-0.094	0.032	0.772	0.062	0.061	-0.045	Reflect	0.043	<0.001
Ítem 36	-0.044	-0.128	0.193	-0.101	0.052	0.024	0.779	-0.106	-0.098	0.318	Reflect	0.043	<0.001
Ítem 9	0.093	0.113	-0.007	-0.033	-0.107	-0.064	-0.044	0.724	-0.119	-0.004	Reflect	0.043	<0.001
Ítem 20	-0.144	0.135	-0.296	0.071	0.147	0.149	-0.230	0.541	0.144	-0.045	Reflect	0.044	<0.001
Ítem 25	-0.074	-0.071	0.112	0.075	-0.017	0.153	-0.122	0.718	-0.006	-0.122	Reflect	0.043	<0.001

Ítem 38	0.104	-0.171	0.140	-0.112	0.017	-0.237	0.400	0.608	0.021	0.189	Reflect	0.044	<0.001
Ítem 12	0.084	-0.021	-0.063	-0.006	0.013	-0.014	0.089	-0.069	0.751	0.153	Reflect	0.043	<0.001
Ítem 18	-0.097	0.096	0.031	-0.021	0.071	-0.028	-0.013	-0.166	0.707	-0.113	Reflect	0.044	<0.001
Ítem 27	-0.016	-0.043	0.069	0.072	-0.116	0.145	-0.061	0.016	0.810	-0.110	Reflect	0.043	<0.001
Ítem 33	0.041	-0.039	-0.067	-0.089	0.077	-0.198	-0.017	0.355	0.442	0.121	Reflect	0.045	<0.001
Ítem 3	0.063	-0.071	-0.008	-0.100	-0.052	-0.045	-0.046	-0.098	-0.178	0.545	Reflect	0.044	<0.001
Ítem 8	-0.080	0.347	-0.102	-0.036	-0.014	-0.164	0.154	-0.173	0.220	0.554	Reflect	0.044	<0.001
Ítem 19	0.008	-0.060	-0.060	0.055	0.044	-0.007	-0.129	0.062	0.003	0.757	Reflect	0.043	<0.001
Ítem 23	0.116	-0.178	0.080	-0.147	0.058	0.055	-0.083	0.059	-0.068	0.771	Reflect	0.043	<0.001
Ítem 29	-0.046	0.047	0.029	-0.005	-0.011	-0.039	0.291	-0.162	0.116	0.782	Reflect	0.043	<0.001
Ítem 40	-0.068	-0.011	0.031	0.207	-0.045	0.150	-0.173	0.252	-0.091	0.725	Reflect	0.043	<0.001

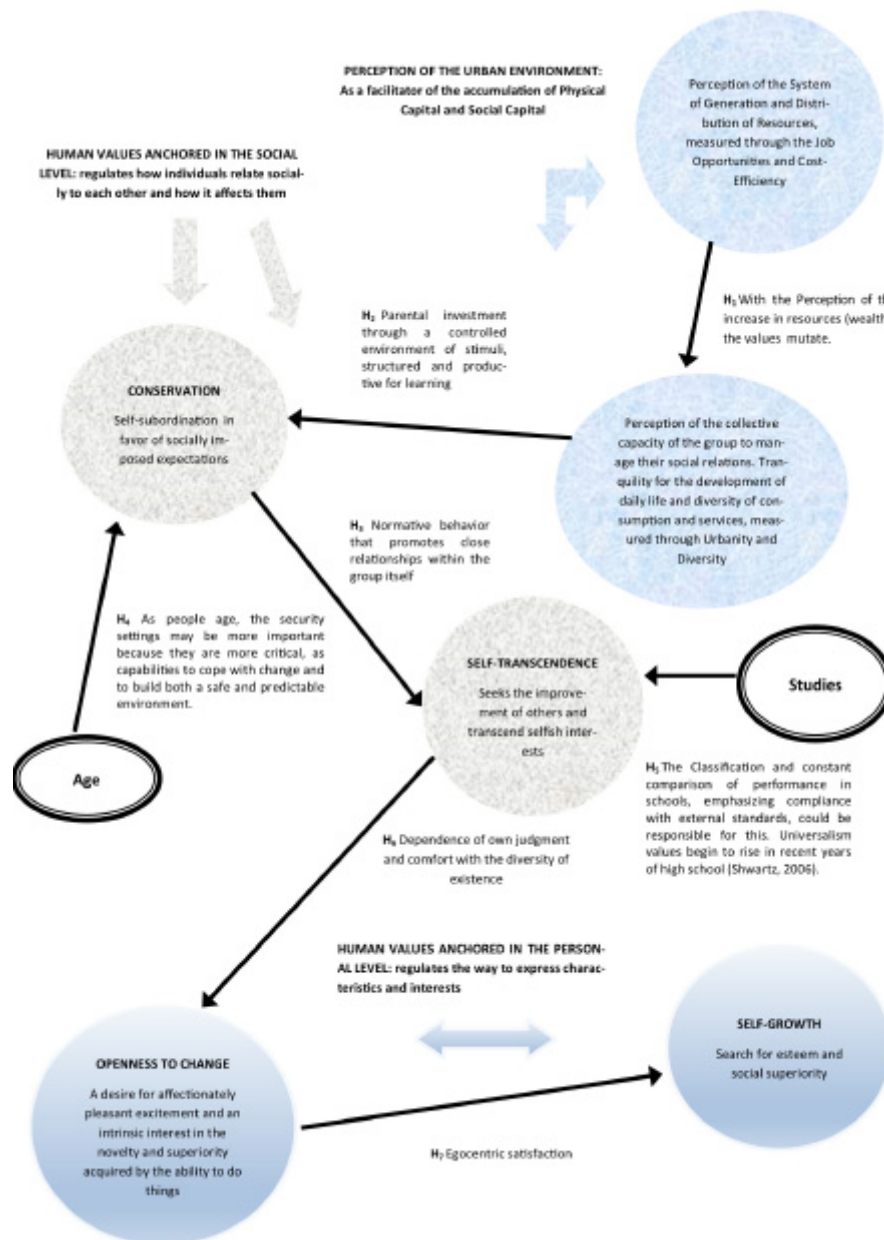


Figure 1. Proposed Inner Model

The Human Value Hedonism shares elements of openness to change and self-enhancement. In our case, we prefer to include it in openness to change. (Schwartz, 2012)

Then, convergent validity is verified for associated dimensions to urban evaluation, and first-order variables: job opportunities, Cost-efficiency relationship, Esthetics and diversity of consumer goods and services and social cohesion. Figure 1 exhibits the proposed model.

Table 5. Combined and transverse loadings for the latent variables that measure the two dimensions of satisfaction with the city in which the respondent resides

	Job opportunities	Cost-efficiency relationship	Esthetics and diversity of consumer goods and services	Social cohesion	Type (a)	SE	P value
General economic growth in the region.	<b>0.739</b>	-0.069	0.219	-0.019	Reflect	0.043	<0.001
Existence of good jobs and promotion of employment opportunities	<b>0.839</b>	-0.060	-0.069	0.072	Reflect	0.043	<0.001
The general level of wages	<b>0.752</b>	0.135	-0.138	-0.061	Reflect	0.043	<0.001
The general level of prices in the city / cost of living.	0.350	<b>0.734</b>	-0.006	-0.094	Reflect	0.043	<0.001
Availability of apartments & houses.	-0.125	<b>0.795</b>	0.078	0.049	Reflect	0.043	<0.001
Housing market / Cost of hiring rental or purchase.	-0.185	<b>0.853</b>	-0.068	0.035	Reflect	0.043	<0.001
Availability of different services.	-0.065	-0.087	<b>0.822</b>	0.118	Reflect	0.043	<0.001
Variety of shopping opportunities.	0.010	0.108	<b>0.717</b>	-0.186	Reflect	0.043	<0.001
Are you satisfied with urban visual image that conveys the city?	0.061	-0.008	<b>0.756</b>	0.048	Reflect	0.043	<0.001
Quantity and quality of cultural activities developed in the city (theater, nightlife, etc.)	0.040	-0.160	0.079	<b>0.825</b>	Reflect	0.043	<0.001
Cultural diversity, different cultures and subcultures.	0.036	-0.148	0.092	<b>0.806</b>	Reflect	0.043	<0.001
Openness and tolerance of citizens.	-0.061	0.254	-0.169	<b>0.628</b>	Reflect	0.044	<0.001
Cohabitation, environment and positive energy that transmits the city.	-0.033	0.126	-0.046	<b>0.724</b>	Reflect	0.043	<0.001

Loadings are without rotating. The transverse loadings have oblique rotation. For reflective indicators are expected values of  $p < 0.05$

Table 4 and 5 describe the convergent validity of the measuring instrument. A measuring instrument has a good convergent validity if the manifest variables (or other measures) associated with each latent variable are understood by respondents in the same manner as they were meant by the designers of the manifest variables. The values SP and P are only for loadings. They have expected values of  $p < 0.05$  for reflective indicators and loadings equal to or greater than 0.5 (Hair et al., 2009), the indicators for which these criteria are not met can be removed.

## 5. General Model Result

After adjusting the items that do not meet the criteria of convergent validity, the model with second-order latent variables is calculated. Table 6 shows overall results.

Table 6. Model fit and quality indexes

Average path coefficient (APC)=0.404, $P < 0.001$
Average R-squared (ARS)=0.261, $P < 0.001$
Average adjusted R-squared (AARS)=0.259, $P < 0.001$
Average block VIF (AVIF)=1.032, acceptable if $\leq 5$ , ideally $\leq 3.3$
Average full collinearity VIF (AFVIF)=1.534, acceptable if $\leq 5$ , ideally $\leq 3.3$
Tenenhaus GoF (GoF)=0.457, small $\geq 0.1$ , medium $\geq 0.25$ , large $\geq 0.36$
Sympson's paradox ratio (SPR)=1.000, acceptable if $\geq 0.7$ , ideally = 1
R-squared contribution ratio (RSCR)=1.000, acceptable if $\geq 0.9$ , ideally = 1
Statistical suppression ratio (SSR)=1.000, acceptable if $\geq 0.7$
Nonlinear bivariate causality direction ratio (NLBCDR)=1.000, acceptable if $\geq 0.7$

The relationship between loadings and second-order latent variables are shown in Tables 7 to 10.

Table 7. Normalized combined and Cross-Loadings.

	Self_tras	Ope_change	Recurse	Conserv	Age	Education	Self-Enhancement	Urb&Div
Benevolence	<b>0.767</b>	0.025	0.022	-0.167	-0.038	-0.126	0.026	0.005

Universalism	<b>0.739</b>	-0.033	-0.028	0.219	0.049	0.166	-0.035	-0.007
Self-Transcendence	0.295	<b>0.767</b>	-0.043	-0.337	0.31	0.153	0.026	0.052
Stimulation	-0.089	<b>0.822</b>	0.02	-0.051	-0.139	-0.086	0.029	-0.01
Hedonism	-0.186	<b>0.752</b>	0.02	0.38	-0.144	-0.052	-0.057	-0.039
Job Opportunities	-0.161	0.104	<b>0.845</b>	0.115	0.007	0.166	-0.063	0.165
Cost-efficiency relationship	0.137	-0.089	<b>0.908</b>	-0.099	-0.006	-0.142	0.054	-0.141
Tradition	-0.062	-0.076	0.067	<b>0.762</b>	-0.049	-0.161	0.004	0.012
Conformity	-0.028	-0.047	0.004	<b>0.766</b>	-0.065	0.076	0.004	-0.013
Security	0.119	0.163	-0.091	<b>0.714</b>	0.153	0.102	-0.01	0.002
Age	0.000	0.000	0.000	0.000	<b>1.000</b>	0.000	0.000	0.000
Education	0.000	0.000	0.000	0.000	0.000	<b>1.000</b>	0.000	0.000
Power	0.070	-0.107	-0.032	-0.104	0.086	0.004	<b>0.936</b>	0.020
Achievement	-0.080	0.121	0.036	0.118	-0.098	-0.004	<b>0.871</b>	-0.023
Social Cohesion	0.114	-0.053	-0.086	-0.083	0.005	-0.048	0.126	<b>0.817</b>
Consume& Esthetic	-0.120	0.056	0.090	0.087	-0.006	0.051	-0.132	<b>0.820</b>

Table 8. Latent variable coefficients

	R-squared coefficients	Adjusted R-squared coefficients	Composite reliability coefficients	Cronbach's alpha coefficients	Average variances extracted	Full collinearity VIFs	Q-squared coefficients
Conservation	0.216	0.213	0.882	0.799	0.713	1.952	0.218
Self-Transcendence	0.462	0.459	0.886	0.742	0.795	2.219	0.460
Openness to Change	0.291	0.289	0.851	0.738	0.657	1.738	0.291
Self-Enhancement	0.121	0.119	0.852	0.653	0.742	1.227	0.122
Job Opportunities			0.839	0.616	0.723	1.303	
Urbanity&Diversity	0.217	0.215	0.875	0.714	0.777	1.440	0.219
Age			1.000	1.000	1.000	1.223	
Education			1.000	1.000	1.000	1.172	

The relaxed version is that only one of the two coefficients (Composite Reliability and Cronbach's alpha coefficients) must be equal to or greater than 0.7. This usually applies to the composite reliability coefficients, which is usually the greater of the two (Fornell & Larcker, 1981).

Table 9. Correlations among I.vs. with sq. rts. of AVEs

	Conserv	Self-trans	Ope-change	Self-Growing	Job_opp	Urb&Div	Age	Education
Conservation	(0.845)	0.613	0.335	0.149	0.157	0.346	0.291	-0.152
Self-Transcendence	0.613	(0.892)	0.537	0.061	0.020	0.235	0.140	0.118
Openness to Change	0.335	0.537	(0.810)	0.347	0.090	0.156	-0.108	0.178
Self-Enhancement	0.149	0.061	0.347	(0.862)	0.190	0.180	-0.021	0.022
Job Opportunities	0.157	0.020	0.090	0.190	(0.850)	0.452	0.052	-0.081
Urbanity&Diversity	0.346	0.235	0.156	0.180	0.452	(0.882)	0.211	-0.057
Age	0.291	0.140	-0.108	-0.021	0.052	0.211	(1.000)	-0.250
Education	-0.152	0.118	0.178	0.022	-0.081	-0.057	-0.250	(1.000)

Square roots of average variances extracted (AVEs) shown on diagonal. The square root of the AVE should be greater than any of the correlations that include the latent variable (Fornell & Larcker, 1981).

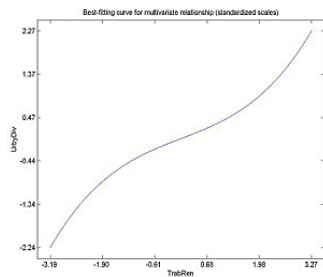
Table 10. Path coefficients and P values

	Self-Transcendence	Openness to Change	Job Opportunities	Conservation	Age	Education	Self-Enhancement	Urbanity & Diversity
Self-Transcendence				0.651 <0.001		0.246 <0.001		
Openness to Change	0.539 <0.001							
Job Opportunities								
Conservation					0.20 <0.001			0.371 <0.001
Age								
Education								
Self-Enhancement		0.347 <0.001						
Urbanity&Diversity			0.465 <0.001					

### 5.1 Proved Hypotheses and Theoretical Interpretation

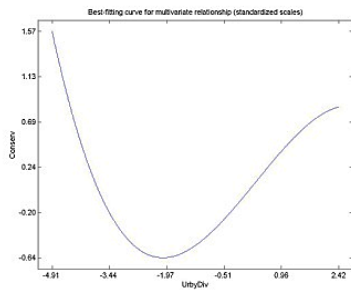


***H<sub>1</sub>*. When the Habitat Perception as a facilitator of Physical Capital accumulation improves, it improves the Perception of the same as a facilitator of accumulation of the Social Capital, measured mainly through the Consumption capacity of the area of residence.**



People consume primarily by their status cravings, to establish social relationships and thereby improve their social capital (Heffetz & Frank, 2008). The success of the cities depends more and more on their role as centers of consumption (Glaeser, et al., 2000, 2006).

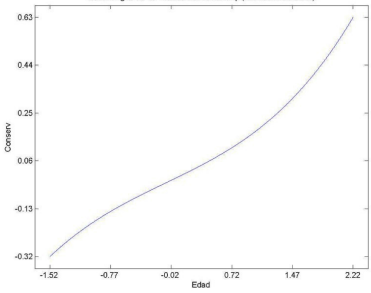
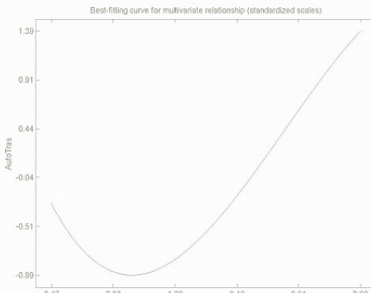
***H<sub>2</sub>*. When the perception of the results of the socialization of the group to which the individuals belong is very low or very high, the human values linked to Conservation become much stronger.**

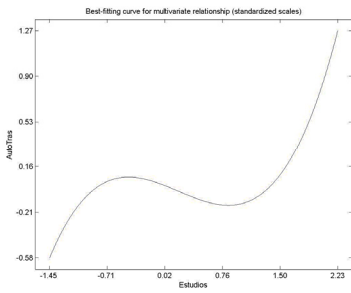


In individual terms, the parents make an investment in time and energy to provide an environment in which they have control over the different stimuli that receive their children, providing them structured and productive means for learning. Maternal care is one of the foundations of later altruistic behavior (Burkart et al., 2009; Churchland, 2011).

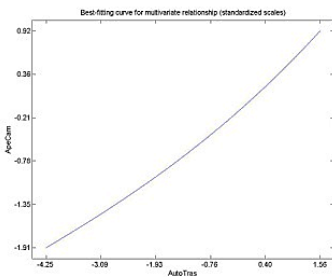
***H<sub>3</sub>*. At an older age, adherence to human value preservation increases.**

A senior age is the correlation with the human value Conservation, either by physical aging or the stage of life they are in, for example, parenting, widowhood, etc. (see Table 3). Strength, energy, cognitive speed, memory and acuteness of the senses diminish with age. Although the onset and the rate of descent vary greatly, rarely the decline is reversed. (Schwartz, 2001).

	
<p><b><i>H<sub>4</sub></i></b>. In general, when the Conservation value increases, the values associated with the Auto Transcendence increase. However, when this value is very low, per these data, a positive impact on the Self-transcendence appears, and then it begins to decrease. It increases again when the value Conservation has not yet exceeded the average. It would be advisable to collect new data from other cities and at different time periods to verify this relationship.</p> 	<p>Cooperation is a psychological mechanism that, given the uncertainty of the environment, seeks to benefit the genes of those who exercise it (Trivers, 1971). The success of survival is not only a function of individual reproduction, but depends on the investment made in relatives (Queller 1995, Hamilton, 1964a, 1964b). Natural selection has favored genes that express such beneficial behavior. (Goetze &amp; James 2004).</p>
<p><b><i>H<sub>5</sub></i></b>. The impact of the Educational Level on the Human Value Self-Transcendence is greater in the first years of formal education, and in those with a formal higher education than the average. Between them there is a plateau.</p>	<p>Educational experiences promote intellectual openness, flexibility and breadth of perspective that are essential for Self-determinism values (Kohn &amp; Schooler, 1983). These same experiences increase the openness to ideas and values of non-routine stimulation (Stimulation has a high positive correlation of 0.14, and Universalism 0.17, see Table 3).</p>

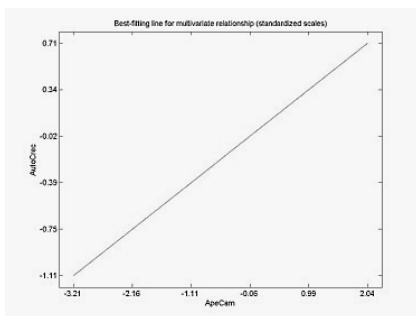


***H<sub>6</sub>*** When the Human Value Self-Transcendence grows, the Human Value Openness to Change grows linearly.



When humans were looking for a way of life beyond the trees, it appeared a new social behavior encoded in the genes, a tendency to cooperate with unrelated individuals. Humans were forced to innovate. Language can be considered as the most important innovation, thanks to which modern man has been able to multiply their options in life (Cavalli-Sforza, 1997).

***H<sub>7</sub>*** The greater the growth of Human Value Openness to change, higher is the tendency to value Achievement and Power as constituents of the Human Value Self-Growth.



In mathematical models of Social Evolution (Bowles, 2013) genetic hyper-sociability is optimally spread when group conflicts exist and works more effectively in these clashes. Therefore, the human value self-enhancement is a human adaptation to resolve these conflicts through competitions focused on signs of dominance, respect, including facial expressions, tone of voice and height (Sell et al., 2010; 2009; Watkins et al., 2010). Testosterone is the hormone responsible for causing competitive exhibitions, euphoria of winners, loser humiliation (Mazur, 2005). By the same token status hierarchies are a pervasive feature of human societies (Boone, 1992; Rubin, 2000). Values such as ambition, success, daring and competition are particularly important.

5.2 Segmentation PLS-PM with Pathmox Algorithm

We use the socio-demographic variables, gender, age, studies, income, and urbanization level of the zone, as segmentation variables of a structural equations model, through Pathmox algorithm. The Pathmox algorithm is based on a segmentation strategy like a decision tree, specifically designed when you have previous information in the form of external variables (socio-demographic variables). The inner models are compared by an extension that tests the equality of two regression models; and the external ones are compared using the Ryan-Joiner correlation test (Sánchez & Aluja, 2006).

The variables urbanization level of the zone of residence and age have been shown to be the significant segmentation variables through the results obtained by the algorithm Pathmox (see Figure 2).

The algorithm has segmented the population into four nodes. Each segment can be interpreted as a cognitive niche (Curry, 2016). For example, Node 5 represents about 84 individuals aged thirty years or older, who live in areas of good urbanization level. The indicators of the segmentation are shown in Tables 11 and 12.

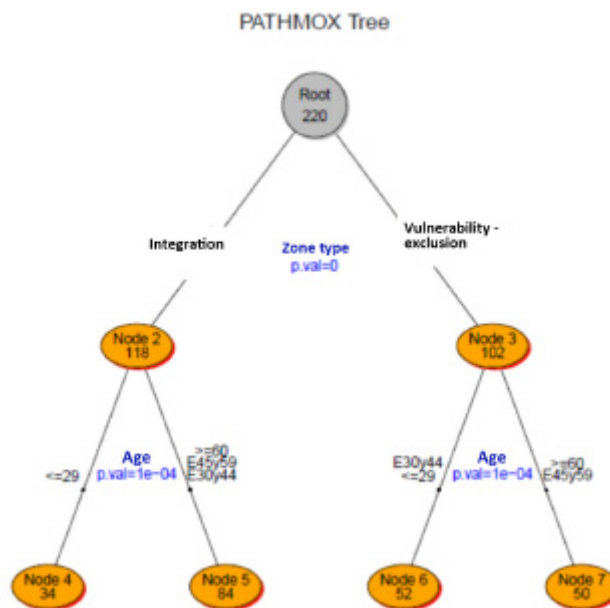


Figure 2. Decision tree based on the Pathmox algorithm

Table 11. Paths coefficients of segments model

Path	Root	Urban level=good and age <= 29 years	Urban level=good and age >=30 years	Urban level=(Regular or bad) and age <= 44 years	Urban level=(Regular or bad) and age >=45 years
JobOpor->Consume	0.551	0.572	0.501	0.547	<u>0.672</u>
Consume->Conservation	0.366	0.266	<u>0.448</u>	0.349	0.230
Conservation->Self-Trasc	0.611	<u>0.716</u>	0.539	0.569	0.594
Self-Trasc ->Open-Change	0.575	<u>0.659</u>	0.548	0.521	0.523
Open-Change ->Self-Grow	0.360	0.326	0.374	<u>0.529</u>	0.135

Table 12. R square of segments model

	Root	Urban level=good and age <= 29 years	Urban level=good and age >=30 years	Urban level=(Regular or bad) and age <= 44 years	Urban level=(Regular or bad) and age >=45 years
JobOpor	0.000	0.000	0.000	0.000	0.000
Consume	0.303	0.327	0.251	0.299	<u>0.452</u>
Conservation	0.134	0.071	<u>0.200</u>	0.122	0.053
Self-Trasc	0.374	<u>0.513</u>	0.291	0.323	0.353
Open-Change	0.331	<u>0.434</u>	0.300	0.272	0.274
Self-Growth	0.130	0.106	0.140	<u>0.280</u>	0.018

In the Figure 3, we compare the averages obtained in each one of the ten values for node 5 (individuals with a good urbanization level and age greater or equal to 30 years) with the remaining nodes.



Figure 3. Comparative values between nodes 4-6-7 and node 5

The description of the value system becomes more clearly differentiated in more economically developed contexts that experience less institutional and ecological stress (Fischer et al., 2016). In economically poorer contexts, individuals have limited options and do not clearly differentiate between the motivational orientations inherent to values. It is only in an environmental context where people have opportunities to make decisions, in which a clear differentiation of values emerges in terms of underlying motivational structure (Fischer et al., 2016).

If the diagram shows it among the averages of the ten values segmented between nodes 5 and 7, which represent the oldest individuals, regardless of the level of urbanization, and nodes 4 and 6 that represent the youngest, without considering the level of urbanization, we obtain the diagram of Figure 4.

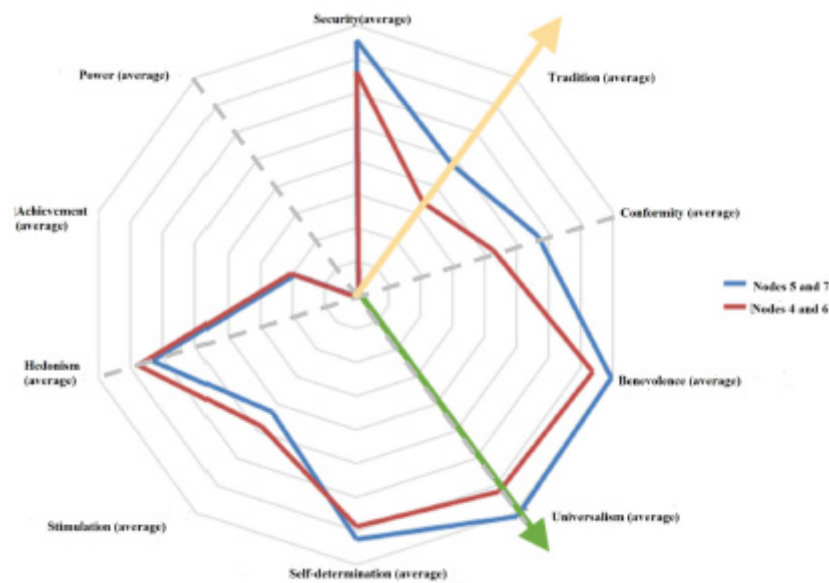


Figure 4. Comparative values between nodes 5-7 and 4-6

The main axes that organize this space are the Openness to change versus the values of Conservatism (those that emphasize the search for self-directed, autonomous and hedonistic values versus those that emphasize the values that promote stability and Maintenance of the social and cultural system) and Self-transcendence in relation to the values of Self-growth (distinctive values that emphasize the well-being of others close and far away and the environment against exploitation and domination of opportunities, resources and people, to improve one's position and status in social consideration) (Fischer & Boer, 2016). Nodes 5 and 7, which target are older individuals, tend to develop protection areas, while nodes 4 and 6 composed of younger individuals tend, as the arrow shows, to venture into Emancipation and Growth zones.

## 6. Discussion

The beliefs are organized hierarchically (Lindenberg, 1996; Maslow, 1954; Roekah, 1973) and serve as guides for human behavior. At the base, there is the satisfaction of the needs of self-protection and the physiological ones, such as: hunger, thirst and sleep (see figure 5). It is an organized system of needs (Maslow, 1954), acquired in the processes of primary (family and peer group) and secondary (schools and other institutions) socialization. The higher levels belong to the personal priority values that result from the adaptation to life experiences, expansion, personal fulfillment, through Openness to Change and Self Growth (Hierarchies exist, for example, in the development of empathy in mammals if we conceive it from several layers).

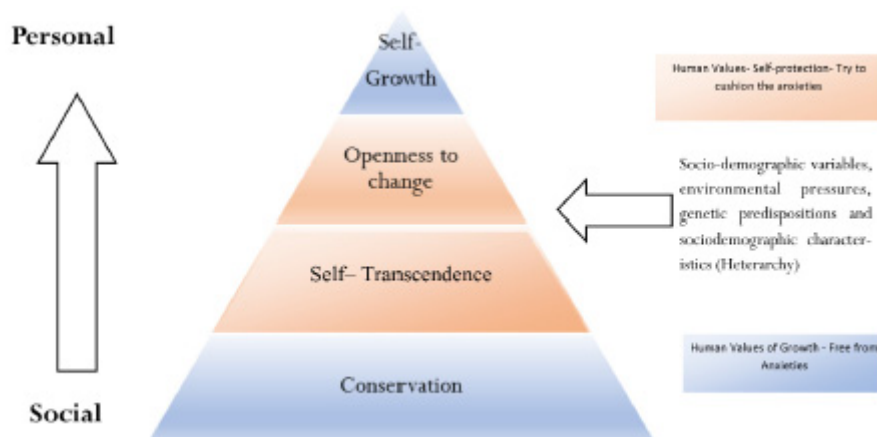


Figure 5. Human Values conceived as a nested scalar hierarchy with pyramidal structure

At the base of the pyramid, values are related to social aspects, serving the interests of the whole community. At the top of the pyramid, values are individualistic, prioritizing aspects of personal development and success

The values form a continuum of related motivations, any level can affect any other, although the position of an element in a hierarchical structure is invariant (nested scalar hierarchy). The nature of this continuum is seen in the emphasis of shared motivation on adjacent values (Schwartz, 1994). Once the higher order processes exist they modify the base processes. The process of higher order is the accumulated prestige or power acquired through the recognition of the agents of the social space of action and influence in which certain social relations converge. (Bourdieu & Thompson, 1991).

The perception of the generation and distribution of resources of the habitat and the other cognitive niches, in present and future time, influence in the value system, as to the relations and their force, so they are ordered and recategorized by the change of conditions (Chiao & Blizinsky, 2010). The decisions are based on the context assessment. They are promulgated by the system, on a broad scale of semiotic freedom. Therefore, the possibility of anomalies exists in the options of the repertoire, so that these options are not classified “only” in a hierarchical way. It is a heterarchy of values depending on the context and can vary from one situation to another, without contradicting a hierarchical structure, but using several. It is a potential command principle in which information replaces authority. The change of values (sometimes contradictory) leads to a continuous rearrangement of priorities (McCulloch, 1945; Crumley, 1987, 1995, 2007; Newell et al., 2005), while it challenges order as predictability. It is a vast periodic table of ethics, there is no single monolithic moral sense or a simple combination of desires and beliefs (Curry, 2016).



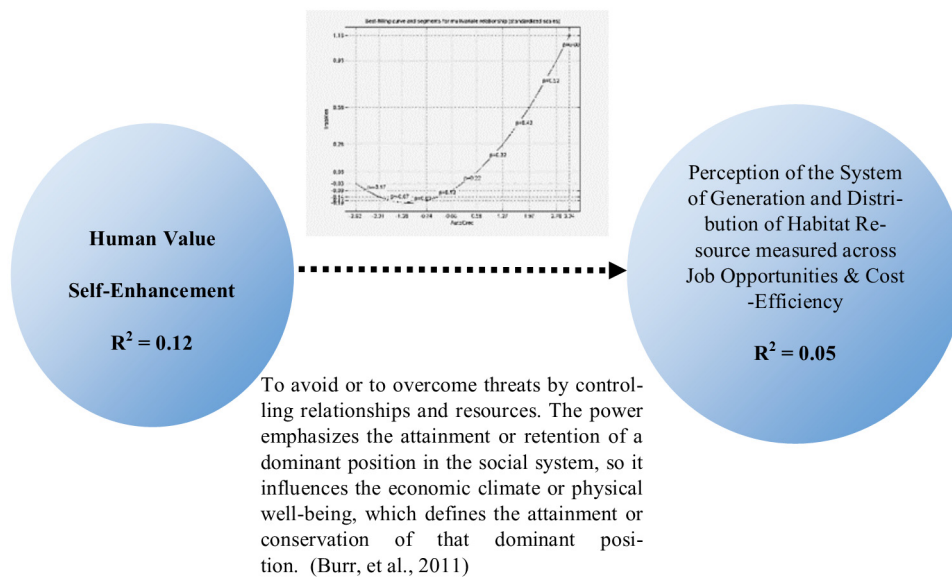


Figure 6. Relationship between the Human Value Auto-Enhancement and Job Opportunities / Cost-Efficiency

When we calculated the path coefficient between the evaluation of the importance of the human value Self-enhancement and Perception of the System of Generation and Distribution of the Habitat Resource a value of 0.22 is obtained with  $p < 0.01$  (see figure 6). However, the structural equation model based on partial least squares does not allow cyclical relationships as would occur if this relationship is added. Given this situation, we propose:

- a) that the construct Perception of the System Resource Generation and Distribution, measured at time  $t = 1$  and later  $t = t + 1$ . This allows a latent variable “Prior evaluation of Generation and Distribution of Habitat Resources” ( $t = 1$ ) becomes an independent variable of the variable “Perception of Consumption / Esthetics & Social Cohesion” ( $t = 1$ ) and the construct “Later evaluation of Generation and Distribution of Habitat Resources” ( $t = t + 1$ ) is a variable dependent on the perception of “Human Value Auto-growth” ( $t = 1$ ).
- b) A recursive system that can be represented by a dynamics model system, cyclical, with socio-demographic variables (age and educational level). It is a way of representing historical knowledge, considering the human value Self-growth as an endogenous variable (see Figure 7).

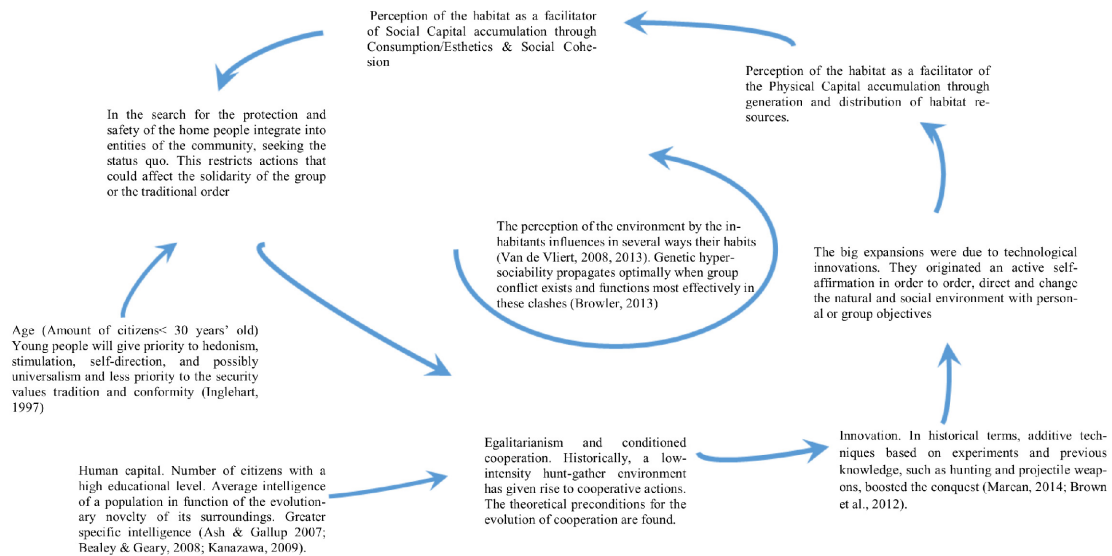


Figure 7. Recursive conceptualization represented by a Dynamic System model with positive / negative feedback

From the theoretical point of view, we can surmise that the domain is the cultural response that promotes an active self-affirmation to dominate, direct and change the natural and social environment with personal or group goals. Hierarchical systems tend to social order, mediated by environmental conditions as facilitators of the accumulation of physical and social capital. (Vauclair et al., 2011; Gomez Fonseca, 2004; Boer & Fischer, 2013; Schwartz, 2006). Power aims status, reputation and prestige, along with control or dominance over people and resources through self-growth related to the perception of Physical Fitness from the evaluation of space climate-economic of the system of generation and distribution of Habitat resources. A degree of differentiation of status is necessary to run social institutions (de Waal, 1989, 1992; de Waal et al., 1993), and the same concept that the individual needs of mastery and control (Korman, 1974) are enclosed with authority, wealth and social recognition.

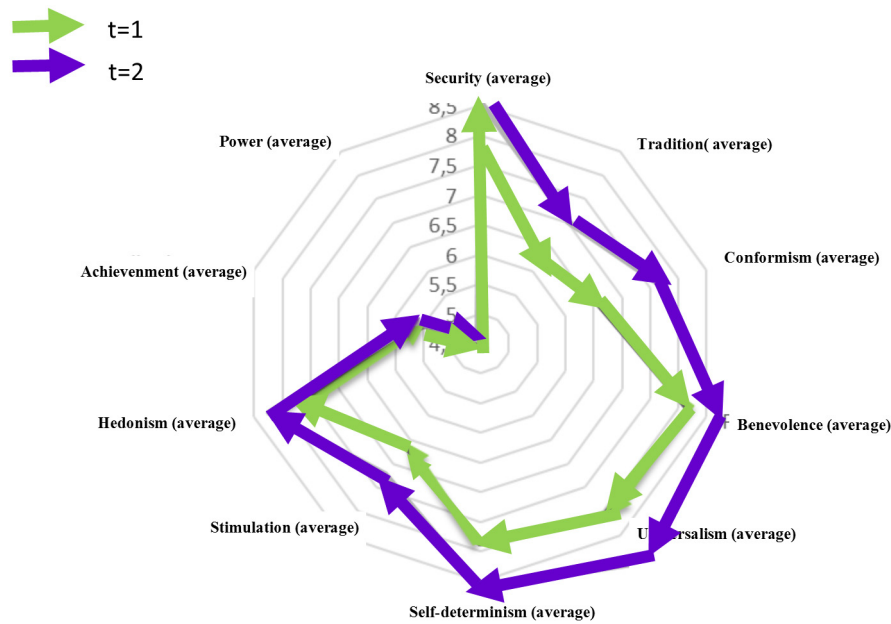


Figure 8. The trajectory of the change of values in citizens with a higher level of urbanization and senior age

If it is possible to find the appropriate segmentation variables of the model, we can arrive at similar circuits (more than two) of the figure 3. This can be interpreted from a historical route, represented by a spider web in an unstable circular graph, that describes the trajectory of the change of values in citizens with a higher level of urbanization and senior age (see Figure 8).

This hierarchy, historically nested, accounts for a spiral of development that generates a monodromy of human values (From a historical point of view, the war, the commerce and the religion did not cease to exist but always acquired new degrees of refinement -conceptualized through the development spiral). When the historical trajectory “returns” to the same axis of a certain Human Value, the “end” will not be the same with which it was started. Something changes when a complete return of the stock structure is temporarily made. In addition to the obvious, time measured in months or years, we postulate that other attributes have also undergone changes, including the symbolic capital through which each Human Value is explained, applied or described in different cognitive niches. As we mentioned, to interpret each cycle as a historical trajectory we recognize a monodromy. It varies a series of intangible properties inherent to the subject that can only exist insofar as they are recognized by others, and by means of which each Human Value is recognized by other members of the belonging group (Sztompka, 1999; Cohen & Prusak, 2001). Methodologically the symbolic capital may be implicit in the measuring instrument, through the type of stimuli that are used to measure each human value.

The innate desires for freedom of choice and equal opportunities are limited if people do not have sufficient resources to improve their living conditions. We conjecture that each cognitive niche represented by a spiral cycle indicates a better use of the potential sources of

available social capital in certain human groups (Kanazawa, 2009).

This leads to a differential of symbolic capital that influences the selection of means to achieve the goal of status. This increase of symbolic capital is related to the power and the type of intelligence that predominates, related to the class ethos and to the possibility of inheritance of cognitive abilities (Bourdieu, 1998; Kanazawa, 2007; Reay et al., 2005; Ash & Gallup, 2007; Kanazawa, 2008; Bailey & Geary, 2009; Clark, 2009, Martin, 2010). In some cognitive niches the needs of economic well-being have been surpassed, and post-materialistic values of self-transcendence predominate (Inglehart, 1977).

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