Exploratory factors structural of the habitus mobility.

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Abstract – The objective of the present work was to establish an exploratory factorial structure of the peri-urban mobility habitus. A non-experimental study was carried out with a non-probabilistic selection of 345 users of the metro public transportation system of Mexico City. The results show that the motivation of the trip is the determinant of the image of the destination, agreeing with the most recent findings, but complementary to the studies carried out around the habitus of peri-urban mobility.

Keywords – mobility; emissions; transport; habitus; image;

Resumen – El objetivo del presente trabajo fue establecer una estructura factorial exploratoria sobre el hábito de movilidad peri-urbana. Se realizó un estudio no experimental con una selección no probabilística de 345 usuarios del sistema de transporte público del metro de la Ciudad de México. Los resultados muestran que la motivación del viaje es el determinante de la imagen del destino, coincidiendo con los hallazgos más recientes, pero complementarios a los estudios realizados en torno al hábito de la movilidad peri-urbana.

Palabras claves – movilidad; emisiones; transporte; hábitos; imagen;

INTRODUCTION

The objective of this paper is to establish the exploratory factorial structure of peri-urban mobility, understood as an observable habitus in 1) aesthesis (aesthetic dispositions), 2) hexis (expressive positions), 3) ethos (ethical dispositions), and 4) eidós (logical provisions) (García, 2008).

The habitus of mobility has been understood as four dispositions related to the logic of transfer, the aesthetics of displacement, the ethics around security and everyday expressiveness (García, 2011). It is a process that is inherited in the interrelation between users, passersby, bystanders, operators or spectators with respect to the quality of the public transport service, concessioner or private, as well as the image of the departure and arrival points of the transport units (García, Carreón, Bustos, & Hernández, 2013).

The ethical dispositions (ethos) refer to a series of learnings of the values and principles that guide a journey and the intentions of transfer in function of the image of a public destiny (García, Carreón, Hernández, Rivera, Aguilar & Rosas, 2015).

The logical dispositions (eidós) refer to abilities of appreciation of the environment, discursive positioning and appropriation of spaces with a purpose of cost and benefit (García, Carreón, Hernández, Salinas & Aguilar, 2015).

The aesthetic dispositions suggest the inclusion of images and discourses related to a transfer, the transport units, the interrelation with the other actors involved in the process of intentional displacement (Hernández, Carreón, Morales, Aguilar & García, 2014).

The expressive dispositions (hexis) connote a series of subjective manifestations shared appreciations around the meaning of a transport and the places of destination, as well as the meanings around the purposes of transfer (Limón, Rivera, Bustos, Juárez & García, 2017).

In this way, peri-urban mobility has been analyzed from the meanings and the appropriation of means of transport as symbolic scenarios of safety, comfort, leisure, recreation or coexistence (Llamas, Bustos & García, 2018).

However, the structure of factors that involves a multidimensional process such as the peri-urban mobility habitus suggests at least the exploration of the relationships between indicators such as; tastes, preferences, expectations, needs, perceptions, appreciations, appro-

priations, uses and customs around the system of collective transport and public destinations (Martínez, Martínez & García, 2018).

ESTABLISHMENT OF MOBILITY ZERO CARBON DIOXIDE EMISSIONS INTO THE ATMOSPHERE

The Intergovernmental Panel against Climate Change, established in 2006 the estimation of mobility from the variables of transfer time, transport and length of displacement.

It is possible to appreciate that the variables of average transfer time and speed allude to the mobility competencies of transporters and users, as well as to the logistics of the infrastructure and the transport system (Rosas, Gómez and García, 2018).

In this way, the calculation of emissions of carbon dioxide into the atmosphere has been proposed as a management tool that, in the case of the Organization for Economic Cooperation and Development (OECD), in its report for 2015, there is a gap between its member countries and the other regions.

Therefore, at the local level, municipalities and communities are exposed to the increase in carbon dioxide emissions and their effects on environmental public health, such as the prospective 2040 scenario in which the mobility of freight transport Feeding service economies will intensify and will be the main challenge for climate change policies and zero emissions programs.

This is how the study of peri-urban mobility is central to the administration of public, environmental and food security in a city and the communities around it (Amemiya, Valdés, Espinoza and García, 2018).

THEORY OF PERIRUBAN MOBILITY

A theoretical approach to the problem highlights the variables that include three matrices related to habitus, human capital and decision making regarding the use of public transport.

It is possible to notice that the study of peri-urban mobility is centered on the use of the means of

transport which depends on the decision-making and this socio-cultural and socio-cognitive variables that would explain the prevalence of one type of transport over others, overcrowding and conflicts between operators and users at the time of transfer, but studies of peri-urban mobility highlight four main factors.

In this way, the habitus of peri-urban mobility is the result of the relationships between the four factors provided that the collective transport system facilitates the interrelation towards a public, historical and significant center for the actors involved (Quintero, Rivera, García, Sandoval, Figueroa & Molina, 2018).

This is so because the system of collective transport is not only a scenario of symbols and meanings around public centers. In addition, it is a scenario of interrelation between different actors that are not limited to security or quality of service (Rivera, García, García, Rosas, Limón, Carreón, Hernández & Morales, 2015).

However, the quality of the collective transport service is also the result of its efficiency and effectiveness (Rivera, Limón, Sandoval and García, 2018). Therefore, it is necessary to observe the factors that allow us to anticipate a conflict-free scenario (Tun, García & Carreón, 2017). Or, at least a safe public service that translates into user confidence in the system and its administration (Villegas, Rosas & García, 2018).

Method

Are there significant differences between the theoretical dimensions of the perception of mobility with respect to the specification of the relationships between those dimensions reported in the state of the question?

Null hypothesis: There will be significant differences between the theoretical dimensions with respect to the specification of their relationships

Alternative hypothesis: There will be no significant differences between dimensions and relationships.

Table 1. Sample descriptive.

	Age	Scholarship	Entry	Civil status
Female	M = 24.3 SD = 1.2	Postgraduate 5%; Bachelor 15%; Baccalaureate 24%, Secondary 46%	M = 3451.2 SD = 243.1	Single 56%; Marriage 23%; Another 21%
Male	M = 26.1 SD = 1.5	Postgraduate 8%; Bachelor 20%; Baccalaureate 31%; Secondary 41%	M = 4233.1 SD = 126.3	Single 67%; Marriage 17%; Another 16%

Source: Prepared with the study data

A non - experimental study was conducted with a probabilistic selection of 345 users who move from suburbs to urban centrality in the public transport system; Metro, Trole, Metrobús and Bus of the CDMX (see Table 1).

The Self-Report of Peri-urban Mobility (AMP-28) was constructed from the Destination Image Differential of (Olague, Flores and Garza, 2017) and the Olague Travel Motivation Scale (2015).

The Self-Report of Peri-urban Mobility included two dimensions for the image of the destination (emotional and cognitive aspects) and two dimensions for the motivation of travel (aspects of impulse and attraction).

The average speed and the transfer time were registered in a self-report of the user, comparing with the reports of the transfer systems, as well as the traffic regulations regarding the speed limit of Mexico City.

The surveys were carried out in the computer posts of the public transport system facilities. The confidentiality and anonymity of the respondents was guaranteed in writing, as well as the fact that the results of the study did not affect their economic status.

The information was processed in the Statistical Package for Social Sciences (IBM-SPSS-AMOS by its acronym in English version 25.0).

Crombach's alpha was estimated

for the internal consistency of the Travel Motivation Scale (alpha of, 880) and Sperman Brown (, 618) for the Destination Image Differential (Carreón, Hernández, Morales and García, 2014).

The adequacy was established with the KMO statistic (, 742) and the sphericity with the Bartlett test ⌈X2 = 213.2 (34gl) p =, 000⌋ (García, 2007).

The validity was established with an exploratory factorial analysis of principal axes with promax rotation. The correlations between the factors with Pearson r, as well as the covariances to observe the relationships between the factors (Carreón, 2014).

Contrasting the model with adjustment parameters; GFI, CFI and residual; RMSEA (Carreón, Hernández and García, 2014).

Table 2. Instrument descriptions.

R	M	S	K	A	F1	F2
R1	4.3	1.0	1.9	.72		.34
R2	4.5	1.2	1.8	.74		.36
R3	4.0	1.1	1.8	71		.37
R4	4.1	1.1	1.6	.73		.30
R5	4.2	1.1	1.8	.74		.38
R6	4.5	1.1	1.9	76		.39
R7	4.2	1.1	1.6	.78		.36
R8	4.3	1.5	1.7	.79	.45	
R9	4.5	1.5	1.7	70	.35	
R10	4.6	1.5	1.8	.71	.36	
R11	3.7	1.1	1.9	.72	.47	
R12	4.3	1.1	1.8	.73	.46	
R13	4.1	1.2	1.6	.74	.45	
R14	4.4	1.4	1.7	.75	.43	
R15	4.3	1.3	1.2	.78	.42	
R16	4.5	1.9	1.4	.77	.35	

R = Reactive, M = Medium, S = Standar deviation, K = Kurtosis, A = Crombach's alpha by removing the value of the item. Adequacy (KMO =, 782), Sphericity ⌈X 2 = 346.34 (56gl) p =, 000⌋. Method: Main axes, rotation: Promax. F1 = Motivation of the Trip (25% of the total variance explained), F2 = Image of the destination (22% of the total variance explained). All items are answered with any of five options ranging from 0 = "not likely" to 5 = "quite likely".

Source: Elaborated with data study

RESULTS

Table 2 shows the statistical descriptions of the instrument that measured the motivation factors of the trip and image of the destination, indicating a consistency higher than the required of 700 (respective alphas of, 750 and, 780).

The motivation of the trip determined the image of the destination and had low covariances with sex, age, schooling and income (see Table 3 and Figure 1)

The adjustment and residual parameters ⌈X2 = 214.6 (45gl) p =, 007; GFI =, 995; CFI =, 997; RMSEA =, 007⌋ suggest the non-rejec-
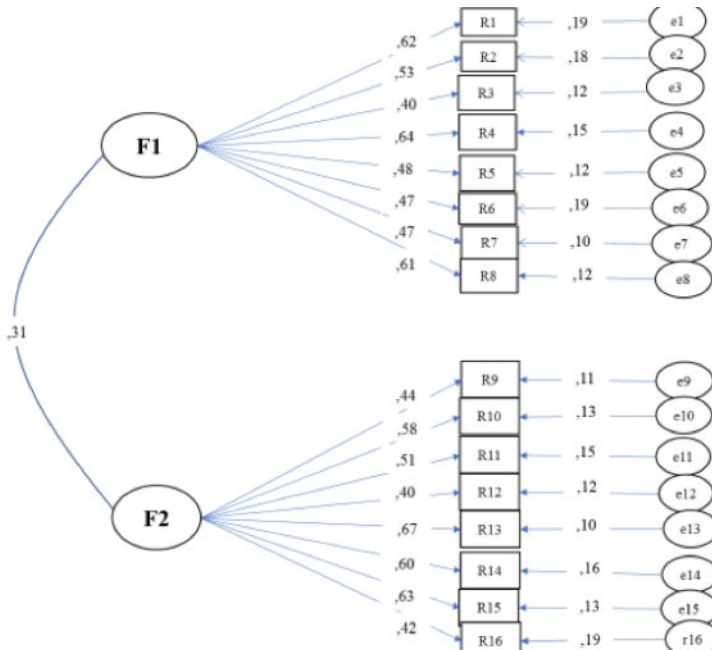
Table 3. Correlations and covariations.

	F1	F2	F1	F2
F1	1,000	,435	1,897	,432
F2		1,000		1,786

F1 = Motivation of the Trip, F2 = Image of the destination: * p < 01, ** p < ,001; *** p< ,0001

Source: Elaborated with data study

Table 3. Correlations and covariations.

F1 = Motivation of the Trip, F2 = Image of the destination: ∩ relations between factors; ← relations between errors and indicators; → relations between factors and indicators

Source: Elaborated with data study

tion of the null hypothesis relative to the adjustment of the theoretical relations between the variables with respect to the empirical observations.

DISCUSSION

The contribution of the present work to the state of the matter lies in the establishment of an exploratory factorial structure of the relationships between the factors that the literature identifies as the determinants of the quality of the system, but the type of non-experimental study, the type of sampling non-probabilistic and the type of statistical analysis limit the results to the research scenario, suggesting the contrast of the model in other collective transport systems such as metrobus or mexibus.

Virkar and Mallya (2018) established as determinants of satisfaction the motivation of the trip and the image of the destination in tourist centers which had high correlations with the socioeconomic variable of income, the sociocultural variable of schooling and the sociodemographic variable of age, but in the present work the sociocultural, sociodemographic and socioeconomic variables had low correlations both with the motivation of the trip and with the image of the destination, suggesting the inclusion of other sociocognitive factors, even when the PIGCC warns that the time displacement and average speed are essential in the calculation of CO_2 emissions.

CONCLUSION

The present work opens the discussion about the relationships between the factors suggested by the PIGCC and those established in a review of the updated and specialized literature in which the travel time and the average speed when linked to the motivation of the trip determined spuriously to the image of destiny.

It is necessary to explore the inclusion of other socio-cognitive factors such as habitus and satisfaction that are part of a deliberate, planned and systematic process in the use of zero-emission transport such as the metro, Metrobus, trolley, tram or bicycle.

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