

A psychosocial analysis of citizens' orientations towards sustainable urban mobility: overview of results from 10 years of research in Italy (and abroad)

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Abstract. This paper summarizes and discusses a series of studies conducted in Italy over the last 10 years on the theme of sustainable urban mobility. The studies applied different theoretical models (attitude theory, social representation theory and the communication research approach) and methodological approaches (quantitative and qualitative) to investigate citizens' orientations (in terms of values, attitudes, beliefs and representations) toward the adoption of more sustainable transportation styles in an urban context. Particular attention was dedicated to deepening the understanding of social psychological factors that affect the endorsement of cycling mobility. The aims of this work were to increase scientific knowledge on the topic and to identify core issues and themes that could inform urban planners engaged in designing more sustainable policies and infrastructures in urban contexts. Regarding the latter, our results: i) suggest the importance of considering urban mobility styles as parts of broader life styles ii) encourage their investigation with more subtle and articulated methodological approaches and iii) recommend taking into account inter-individual and socio-cultural factors when planning interventions directed to change urban travel mode choices.

Introduction: Core issues and tenets in EU urban mobility. Urban areas host 70% of the European Union (EU) population, but within most cities, mobility is increasingly difficult and inefficient (European Commission, 2013a). “Many European towns and cities suffer from chronic traffic congestion which is estimated to cost 80 billion Euros annually. Urban areas also account for a high share (some 23%) of all CO₂ emissions from transport” (EC, 2013a, p.1). Moreover, “38% of Europe's road fatalities, in 2012, occurred in the cities, with vulnerable users such as pedestrians being particularly exposed” (ivi). To tackle these urgent

problems, the EU has proposed various actions such as phasing out the use of conventionally-fueled vehicles in European cities by 2050 and prompting municipalities to set up and adopt *Sustainable Urban Mobility Plans* – (SUMP; EC 2013a, 2013b). A SUMP “fosters a balanced development of all relevant transport modes, while encouraging a shift towards more sustainable modes” (EU 2013b, p.3). Since private cars and motorbikes are still responsible for many of the problems mentioned above, the development of more sustainable transport methods, such as public transportation, electric/hybrid cars, motorbikes and bicycles has been highly recommended (European Commission, 2012). The EU Ministers for Transport reunited in Luxemburg in October, 2015, have declared cycling as a climate friendly transport mode and called upon the Commission, Member States and local regional authorities to consider actions directed to increase bicycle use (the *Declaration on Cycling*). This has raised the attention of many EU countries and led to the development of new plans and infrastructures. On December 2017 in Italy, these principles were translated into legislation that encompass several dispositions for the development of cycling mobility at a national level (the national path system for bicycles). Many municipalities in Italy have anticipated and/or followed this legislation and the EU indications, by adopting their own strategies for promoting sustainable and integrated mobility within their territorial areas (the so-called PUMS, Piani d’Azione sulla Mobilità Sostenibile, [Action Plans on Sustainable Mobility]). Hence, the Italian mobility system overall is going to face a great endeavor in the near future.

The role of social sciences in implementing a new mobility culture in EU. The Green paper on urban mobility (European Commission, 2013a,b) stressed that a deep transformation of the European transport system cannot be brought about through incremental improvements alone but requires a new mobility culture stemming from a true paradigm shift. According to the paper, educational, information and awareness raising campaigns are pivotal for establishing this shift. This means that planning sustainable urban mobility implies a wide range of knowledge and competences from various disciplinary fields, which include not only engineering and economics, but also social sciences. However, various authors have noticed how policies directed to obtain changes in the transport culture and behaviors have often been based on implicit assumptions and extemporal solutions, rather than on “methodologically robust tests of what is, and is not, effective” (Graham-Rowe et al., 2011, p.414). As Niemeier (2010) noted, when a methodologically strong evaluation is lacking “a vacuum is created in which less informed, more ideological perspectives are taken as fact, assumed to be founded on empirical data and objective reasoning” (p.563). A systematic review of interventions

designed to reduce car use revealed that in only six out of 77 studies did the intervention reduce car use, while only 12 were accompanied by rigorous methods of evaluation (Graham-Rowe et al., 2011). Several intervention approaches were identified as potentially effective but, given the small number of methodologically strong studies, it was difficult to draw robust conclusions about their actual utility. Hence, in the domain of transport culture, behaviour, and education “new research programmes using high quality methods is urgently needed to provide a robust evidence base for policy development” (Graham-Rowe, et al., 2011, p.414). For this reason, all disciplines, including social sciences, should proceed to identifying the relevant factors, building the appropriate theoretical models, adopting adequate methodologies for model evaluation, selecting specific quality indicators and translating results into specific suggestions for policy development and strategy monitoring.

Social sciences contribution to addressing mobility issues. Social sciences can provide useful theoretical models for interpreting the factors that foster or hinder the implementation and sharing of transport methods among a given population. For example, a consistent amount of research conducted in the geographical, economic and consumer fields have contributed to describing the existence of recurring patterns of travel behavior and to delineating the transit demands of specific social groups. These studies are often referred to as *travel mode choice* studies, a label that follows the one attributed by the traditional *urban travel-demand models* (Barff, et al., 1982, p 370) to one of the five parts (namely: *mode choice, trip generation, trip distribution, trip attraction* and *route assignment*) in which the so-called *travel demand function* is conventionally divided. Studies on travel mode choices have identified four major factors directly affecting people’s final decisions on the mode of transportation: the cost of the trip, the quality of the service provided (e.g. convenience, reliability, comfort, etc.), the duration of the journey (travel time, waiting time, etc.), the availability of specific means of transportation (the possibility to have direct access to a specific transportation modality), and congestion and crowding (see e.g. Barff, et al., 1982; Cervero & Kockelman, 1997). In addition, for each specific transport mode it is possible to identify further peculiar aspects (e.g., the physical characteristics of the trail, and weather conditions can affect the choice to walk or cycle; Cervero & Radisch, 1996). However, the scientific literature shows that, although analyses based on instrumental considerations, infrastructures and urban form features can play an important role (e.g. Cervero & Kockelman, 1997; Stead, 2001; Williams, 2005), they might be insufficient to seize the complexity of people’s travel mode choices in

modern western societies (e.g. Bamberg, 2013; Hunecke, et al., 2007; Lanzini & Khan, 2017; Möser & Bamberg, 2008; Prillwitz & Barr, 2011). Studies in social psychology have shown that while economic and structural reasons can explain many aspects of travel mode choices their influence over the final decisions are often moderated or mediated by a number of social psychological factors (e.g. Higham, Cohen, Peeters, Gössling, 2013). In particular, in relation to pro-environmental travel choices, among the moderators identified there are personal attitudes, desires and emotions (e.g. Carrus et al., 2008; Prillwitz & Barr, 2011), past behavior and habits (e.g. Klöckner & Matthies, 2012), social value orientation and trust in others (e.g. Van Vugt, Meertens & Van Lange, 1995), pro-environmental values and the perceived psychological benefits deriving from the use of specific means of transportation (e.g. Ellaway et al., 2003), personal sense of responsibility and concern for the health problems caused by the use of private cars (e.g. Hunecke et al., 2001, Steg & Vlek, 1997), as well as identity (e.g. Murtagh, et al., 2012; Heinen, 2016; Whitmarsh, & O'Neill, 2010) and socialization processes (e.g. Haustein et al., 2009). Other studies have highlighted how specific characteristics of the physical and social contexts can influence the formation and activation of people's attitudes and norms in relation to specific travel modes (e.g. Bamberg et al., 2007; Verplanken et al., 2008). Several of these studies have focused on sustainable urban mobility in general and on cycling in particular. The next paragraphs have been dedicated to them.

The studies on the social psychological factors associated with the use of bike in an urban context. In recent years there has been a growing attention to cycling mobility, both from political institutions and from the research world (e.g., Pucher & Buehler, 2017; Heinen et al. 2010; for recent studies see for e.g. Konstantinidou & Spyropoulou, 2017; Passafaro et al., 2014; Xing et al., 2018). While the initial attention had been mostly directed to confirming the role of instrumental considerations and environmental facilities (infrastructures), interventions merely based on these factors have rarely produced the expected results in terms of a substantial growth of bike use in urban areas, especially in western countries. The reasons for this shortcoming point to the fact that these studies might have failed to seize implications that goes beyond the classic econometric conception of travel utilitarian factors. In particular, these studies fail to consider individual and social determinants that need to be addressed to produce changes at the psycho-social and

cultural levels. However, deepening these aspects requires the use of suitable theoretical models and the adoption of appropriate methodological approaches, as well as the ability to identify the models and methods adequate to the specific situation. For this reason, about 10 years ago, we decided to set up an articulated line of research directed to identifying and testing the social psychological factors and models (as well as, related assessment tools) that could be applied to the study of the determinants of bike use in large urban contexts. From a theoretical point of view, the goal has been to build measurement instruments to be used in the testing of specific explanatory and predictive models of the behavior investigated. From an applied point of view, the goal was to collect information useful for designing urban plans for sustainable mobility that could take into greater account the social psychological factors influencing such behaviors. An initial line of investigation has focused on analyzing people's representations of the concept of sustainable urban mobility as well as identifying citizens' behavioral and normative beliefs regarding the use of bikes in the city. More recent research has focused on studying the relationship between attitudes and beliefs concerning bikes, as well as on the social representations and media representation of the use of bikes in the city. Moreover, a parallel research line has tested the plausibility of the use of a specific theoretical model (the model of goal-directed behavior) for predicting the desire to use bicycles in the city. In the next paragraphs, the results of these studies will be discussed and compared with those obtained by parallel studies conducted at the international level on similar topics.

What does 'sustainable urban mobility' means to citizens? Wholwill (1983) noticed how some concepts (e.g., the concept of 'nature') are so often used in current speech that their meaning is taken for granted. More specifically, people tend to consider them as primary categories and to expect their meaning to be the same for everyone. However, when the author investigated the concept of nature, he discovered that the natural/artificial distinction is a cultural product, and, as such, it can vary with sociocultural factors. Subsequent empirical studies have supported this hypothesis by highlighting how not only people of different sociocultural origins tend to hold different ideas of what is and is not natural, but different interpretations of the 'naturalness' of environments can lead to differences in landscape preferences and in the orientation toward the conservation of biodiversity (e.g. Williams & Cary, 2002; Van den Berg, et.,

1998). These studies suggest that investigating people’s individual and shared ideas (e.g. beliefs and representations) of the theme at stake is a prerequisite for understanding the key parameters they use to interpret socially relevant events and issues. For this reason, one of the first investigations we carried out was directed at assessing people’s beliefs regarding the concept of ‘sustainable mobility’. The goal was to identify core ideas associated with it and to detect possible differences in the corresponding interpretations in function of sociodemographic (age, gender, level of education) and behavioral factors (frequency of the use of various means of transportation that include cars, buses and bicycles) as well as personal values (measured via Stern et al’s, inventory). The study, conducted by Piccini, Rimano and Passafaro (2013) on a convenience sample (balanced by gender and age) of 367 residents (age range 13-85; $M=34,86$; $SD=14,04$) of various urban areas in Italy (see Table 1), used a short semi-structured questionnaire including four sections. The first one, asked participants to freely report the words that came to their minds when they thought of ‘urban mobility’ (first stimulus locution presented) and ‘sustainable urban mobility’ (second stimulus locution presented). Subsequently, they were asked to assign a positive or negative valence to the words reported by adding a “+” or “-“ sign next to each of them (e.g. De Rosa, 1995).

Table 1. Participants’ demographic, residential, educational and mobility characteristics in Rimano et al.’s 2013 study

<i>Maximum level of education reached</i>			<i>Gender</i>		
Primary 8,7%	high school 59,9%	University 31,3%	Males 45,8%	Females 54,2%	
<i>Geographical location within the country</i>			<i>Types of urban area of residence</i>		
North 26,7%	Centre 59,9%	South 13,4%	Large size 55%	Medium seize 21%	Small size 24%
<i>Use of the bicycle in the city</i>			<i>Car use</i>		
Never 56,9%	sometimes 18,3%	Often 24,8%	Never 14,2%	Sometimes 26,4%	Often 59,4%
<i>Use of public transportation</i>			<i>Use of motorcycles</i>		
Never 28,3%	Sometimes 30,2%	Often 41,4%	Never 73,3%	Sometimes 6,3%	Often 20,4%

The results (see Table 2) suggest that, in our sample, the shared representation of ‘urban mobility’ was overall negatively tuned and characterized by a group of negatively connoted words (overall frequency = 857) including ‘traffic’ (f=168), ‘pollution’ (f=165), ‘chaos’ (f=83), ‘stress’ (f=61), ‘difficulty’ (f=42), ‘noise’ (f=32), ‘parking’ (f=29), ‘delay’ (f=25), ‘accidents’ (f=24) and ‘costs’ (f=20), while the positively connoted words elicited (overall f= 184) were ‘bicycles’ (f=73), ‘subway’ (f=55), ‘motorbikes’ (f=35) and ‘organization’ (f=21). This indicated that a substantial part of our sample experienced ‘urban mobility’ as problematic and saw bicycles, subways, and motorbikes as a solution. This was supported by the fact that the words most often associated with the stimulus ‘sustainable urban mobility’ (that elicited positively connoted words only) was ‘bicycle’ (f=135), followed by ‘cycle paths’ (f=75). However, other words associated were ‘ecological car’

(f=67) and ‘car sharing’ (f=48), thus indicating that for some people it is not possible to think of a sustainable urban mobility without cars. Apparently, the highest level of controversy revolved around ‘cars’ and ‘buses’ (the other important protagonist of urban mobility in modern cities) as the two concepts were mentioned with both positive and negative connotations. Some light was shed on these ambiguities by the subsequent specificity analysis (performed using the VoSpec procedure in the SPAD software). This is a test based on chi square metrics that identifies which terms are significantly ($p<.05$) over-used (or under-used) in a part of the corpus compared with the overall distribution and detects differentiations in words frequency in function of specific design variables. The analysis performed on our data looked for differences as a function of gender, transport habits and personal values. In this way, we learned that, for example, electric motor vehicles (‘electric cars’ and ‘electric motorcycles’) mentioned in a positive sense were more often reported by men, who also tended to refer to infrastructural features (‘roads’, ‘infrastructures’, ‘preferential lanes’), either in positive or negative terms, more often than women. This seems to indicate that the men in our sample were focused on the structural and technological features of the context or the vehicles more than women.

Table 2. Frequency (f) and overall positive (+) and negative (-) evaluations of the lexical categories found associated to “urban Mobility” and “sustainable urban mobility” in Rimano et al’s. 2013 Study.

Urban Mobility	f	Sustainable urban mobility	f
Traffic -	168	Bike +	135
Pollution -	165	Cycle paths +	75
Chaos -	83	Ecological car +	67
Bus +	73	Bus +	63
Bicycles +	67	Car sharing +	48
Stress -	61	Relax +	48
Metro +	55	Public transport +	46
Car -	46	Pollution +	44
Infrastructure -	44	Pedestrian area +	40
Bus -	42	Walking +	37
Car +	42	Green areas +	35
Difficulty -	42	Ecological buses +	34
Infrastructure +	38	Ecology +	33
public transport +	37	Desirable +	32
Scooters +	35	Metro +	32
Noise -	32	Pollution +	30
Parking lots -	29	Pedestrians +	26
Bus -	27	Innovation +	24
Car -	26	Environment +	22
Delays -	25	Organization +	21
Accidents -	24	Clean air +	20
Inefficient -	23	Respect +	20
Efficient +	22		
Organization +	21		
Costs -	20		

Men also tended to refer to ‘bicycles’ and ‘pedestrians’ in a negative sense more often than women, which might indicate a higher inclination towards interpreting the interaction with the other road users in conflictual terms. Women, instead, seemed more focused on practical aspects such as ‘utility’ and ‘safety’ issues, and they recalled themes related to health (‘relax’) and the environment (‘nature’) more often than men. However, the most notable differences emerged in relation to travel habits. Those who used the bike more often tended to express more articulated (i.e. produced more differing words) as well as critical views of both ‘urban mobility’ and ‘sustainable urban mobility’ focusing on efficiency, infrastructures, traffic, dangerousness, pollution and innovation. Moreover, these people seemed to have a negative perception of both private cars and a specific public means of transportation, subways. On the contrary, those who did not use bikes, spoke of both cars and subways in positive terms, focused on the utilitarian implications of travel (costs and efficiency), and had a negative view of the other road users and some specific strategies implemented by local authorities to reduce pollution (e.g. limiting car circulation in the city). The two stimuli tended, then, to evoke more idealized and ecological ideas in younger respondents and in those with more ‘biospheric’ values, while older respondents and those holding more egocentric values appeared more focused on the utilitarian implications. Overall, these results confirmed that the representation of urban mobility encompasses widely shared views and ideas, as well as contents that can vary as a function of various factors of social-demographical (e.g. age and gender), behavioral (e.g. practices and lifestyles) and sociopsychological nature (e.g. personal values). However, it was also evident that further studies were needed in order to identify other sources of variability. Moreover, our results seemed to indicate that people can hold different views regarding each specific means of transportation and this encouraged us to undertake more focused research approaches.

Representations of the use of bikes in the city at the inter-individual, collective and media levels. Previous studies on the representation of the use of bikes in the city for everyday transportation purposes had shown the existence of ambivalent views on the issue (e.g. Dickinson & Robbins, 2009; Gatersleben & Appleton, 2007; Hopkinson & Wardman, 1996). On one hand, these studies suggested that people saw bikes as healthy, fun, and sustainable means of transportation, that are able to enhance the quality of life in urban areas at both the individual and the collective level. On the other hand, many potential ‘barriers’ to the use of bikes in an urban context were mentioned recurrently, which ranged from the risks of accidents and assaults to fatigue, from

exposure to adverse climatic events to the unsuitability for long distance destinations, the difficulty in carrying other people and things, and so forth (e.g. Heinen et al., 2010). Because these types of inconveniences tended to be reported first by the people interviewed on the topic and to pervade their justifications for not cycling (e.g. Rimano et al., 2015), experts and local authorities seemed to believe that the removal of such barriers, for example, by enhancing the quantity and quality of cycling infrastructures, would result in an exponential growth of bike users. Unfortunately, the literature has suggested that this is not always the case, as increasing cycling facilities does not necessarily (or automatically) lead to a substantial increase in cycling rates, whereas ‘spontaneous’ raises in cycling rates have been recorded in areas with few cycling facilities (e.g. Savan et al. 2017). This did not question the importance of cycling infrastructure *per se*, but it suggested the necessity for more subtle investigations of peoples’ discourses on transport choices to let the weight of the other intervening factors emerge. For example, an aspect that we thought had been overlooked by previous literature concerned the sociocultural components of the representation of the use of bikes in the city. A study carried out in the UK by Dickinson and Robbins (2009) found that cycling tended to be associated with ‘other people’, ‘times’, and ‘places’, and was framed as a leisure activity for children ‘which best occurs in safe and pleasant places’ (Horton, 2007, p.143, cited in Dickinson & Robbins, 2009). Moreover, the authors noticed that the figure of cyclists were ‘othered, stigmatized, and stereotyped’. Cyclists were framed as children or visitors cycling for leisure purposes, and cycling was situated close to a mode of transport for low income groups. These and other characteristics of cycling representation led the authors to conclude that in these contexts cycling had become a ‘marginalized form of transport’, and that such representation was constantly reinforced by the cycling promotion literature and government discourse, which framed it as ‘dangerous’ and as a ‘problem’ (Dickinson & Robbins, 2009). However, little empirical evidence existed at that time regarding the relationship between the social discourse on cycling and people’s representations of the use of bikes in the city. For this reason, we decided to conduct a set of studies aimed at attempting at providing some contributions in this direction (Rimano et al., 2015). We decided to compare the image of bikes (and their users) as it emerged from the news and advertisement of various types of media (TV, paper press, and online press) in Italy with that derived from the individual experience of people (N=94) living in a big Italian city (Rome). The results indicated that the two representations presented several points of overlap as well as different structures and contents. The analyses of the mass media and citizens’ responses both contributed to depicting a picture in which the bike

seemed “to embody the dream of a sustainable city of the future rather than a concrete solution to the urban problems at present”, thus confirming the tendency to conceptually displace bikes to other times and places as recorded in previous studies. However, it was also evident that the media reported a partial view of the issue that neglected important implications of the use of bikes for daily transport purposes. One of these concerned the important changes at the social and interpersonal levels entailed by the desired changes in mobility styles (i.e., the role of transport in every day personal, interpersonal, and social life). In addition, both the media and the sample interviewed appeared to neglect crucial issues regarding safety, a theme typically associated with infrastructural deficiency, while the evident influences from sociocultural biases were substantially overlooked. Another important result pointed to the existence of different views of cycling between cyclists and non-cyclists, with the latter showing a tendency to reproduce media concepts in their discourse more often than the former. This result confirmed what Dickinson and Robbins (2009, p. 69) had previously noticed: “in the absence of an actual experience of cycling, social conceptions tend to shape people’s knowledge of cycling and the potential for cycle use” (see also Rissel, et al., 2010), and these social conceptions see cycling in urban areas as ‘not normal’. This led us to think that a key aspect that was still in need of investigation concerned the nature of cycling experience as well as its relationship with sociocultural factors. Because a crucial part of cycling experience is of a physical nature we decided to deepen this aspect. That the physical experience with a means of transportation can be associated with different attitudes and emotions was a fact already ascertained by previous research (e.g. Gatersleben & Uzzel, 2007; Gatersleben & Appleton, 2007), but little was known about the way in which such physical experience is incorporated into people’s representations of bikes or the way it could interact with sociocultural factors. For this reason, we have recently begun a new line of research focused on studying the social representation of the use of bikes in the city by analyzing its symbolic, emotional, material and sensorial components (Sarrica et al, in press). The results obtained by these studies have highlighted how sensations and feelings represent the aspects first cited when people are asked to think and freely report their ideas about cycling (both within and outside the city). This result parallels what had spontaneously emerged in our previous research work (Rimano et al., 2015, when people had solely been asked to report the pros- and cons- of using bikes in their city) and it seems to contrast with the greater (and exclusive) attention dedicated to the cognitive (‘rational’) motives that have so far characterized the econometric studies on travel mode choice in general and on cycling in particular. Moreover, the results confirmed the existence

of different views on the issue as a function of the geographical origin of the subjects (northern vs central and southern areas of the country) as well as their experience with the different means of transportation (cars, buses, motorcycles, walk). This means that the social representation of a means of transportation such as a bike tends to include a mix of experiential and sociocultural contents; the latter (the sociocultural ones) tend to prevail when the former are low, and *vice versa*. These results are in line with the literature on the topic. Piatkowski and Marshall (2015) differentiated the views of those who were interested in bicycling but unwilling to cycle regularly from those who cycled regularly. The two types of cyclists tended to report different necessities and to perceive different barriers to cycling, leading the authors to conclude that the determinants of bicycling might vary widely depending on individual, attitudinal, and built environment characteristics. Consistent with this, Gatersleben and Appleton (2007) showed how the factors relevant to prompt cycling can vary at different stages of change of the travel behavior, with some factors being more relevant in the initial phases (weak habit to cycle), and others being more relevant only subsequently (when a stronger habit to cycle has been established). Moreover, Gatersleben and Haddad (2010) identified four shared stereotypes of bicyclists related to different cycling styles, while Steinbach and colleagues (Steinbach et al., 2011) suggested how cycling can assume particular meanings in relation to specific social groups, categories or classes, and how these meanings can vary across places and times. Similar conclusions regarding the context and time variability of cycling styles have been recorded by Barr, Shaw and Coles (2011), and by Goetzke and Rave (2011) who found evidences that cycling practices and their determinants could change between municipalities and neighborhoods within them. Hence, taken together, studies conducted at the inter-individual and collective level as well as on the media (Passafaro et al., 2014; Rimano et al., 2015; Sarrica et al., in press; Sarrica et al. forthcoming) have highlighted the importance of going beyond the traditional utility concept on which most interventions in the transport domain have been based in the past, and to conduct more subtle and deep investigations of the meanings and implications of cycling for everyday individual and collective urban life.

Modeling the use of bikes in the city. Identifying and assessing single specific factors potentially related to the use of bikes is the first step toward the planning of effective strategies to increase cycling in the city.

However, the informative potential of such data also depends on how this is used within the planning process. Some authors have suggested the importance of using them within broader models of the social systems, able to bridge the different levels of analysis relevant for environmental policies. For example, Bamberg and Schmidt (2000) proposed to adopt Coleman's (1990) model of the relationship between the macro/meso levels of social systems with the micro-level analysis of individual action. According to these authors such an approach would allow for identifying both the 'objective' limits and opportunities in the social context and the way in which they are perceived by social actors at an individual level. A strength of this approach is that it suggests the application of a specific theory of human behavior to explain the relationship between such perceptions and the behavioral choices at the individual level so that appropriate policies and/or strategies can be applied to obtain desired behavioral modifications in the population. Bamberg and Schmidt (2000) suggested to use Ajzen's (1991) Theory of Planned Behavior (TPB) to understand the individual travel mode choices, to plan and implement a set of behavioral change strategies, and to assess and explain the actual changes obtained. However, although several studies have shown the utility of the TPB model in this field, some authors have also questioned its 'sufficiency' (see Staats, 2003 for a review and discussion) because 1) it is merely focused on factors that act at an individual level, 2) it refers mainly to reasoned and cognitive psychological processes, and 3) it tends to equate personal change and societal change (e.g. Batel, et al., 2016; Uzzell & Rätzl, 2009). It is thus essential to start testing models of travel behavior that are able to encompass factors of different nature. For this reason, a parallel line of investigation on cycling behavior has focused on the testing of models able to encompass the crucial components identified in previous qualitative research. One line of this research has applied Perugini and Bagozzi's Model of Goal Directed Behavior (Passafaro et al., 2014). Although individual cognitive factors are central to this model, it has the merit to take into account the role of emotions and past behavior (experience). Moreover, this model allows for the prediction of the desire to use a means of transportation which could reveal information useful for designing strategies in all those contexts that see a low diffusion of the use of a certain means of transport. The model has been applied to investigating the propensity to use bikes for everyday purposes in a convenience sample of (N=387) residents of the city of Rome. Particularly noteworthy is the fact that the results of the quantitative investigation conducted using this model parallel those obtained with the qualitative approaches. Anticipated emotions

represented the main direct predictor of the desire to use bikes in the city and were able to mediate the effect of more cognitive (rational) factors as well as the influence of perceived social norms.

Conclusions

After a brief introduction to the EU policies concerning urban mobility and a review of psychosocial studies on sustainable mobility, this paper has summarized and discussed the results of a set of studies on citizens' views (beliefs, attitudes, representations, etc.) on the topic conducted in Italy in the last 10 years. The results of each study have been discussed in relation to the empirical evidence existing in the international literature and in light of their implications for urban policy and planning in the EU and abroad. Taken together, the investigations conducted so far have led us to the following conclusions:

- First of all, in general, we can affirm that both quantitative and qualitative studies are essential for identifying the factors associated with specific transportation choices, including the use of bikes in the city. Model-based quantitative studies can be used to put forward hypotheses concerning possible causal relationships among the factors investigated and to link them to specific factors at the meso- and macro- levels of analysis. Qualitative studies are essential for drawing a deeper, more comprehensive and holistic view of the targeted practices able to seize their multifaceted nature. This is fundamental for having a view that goes beyond the focus on the mere average individual and to highlight the complex relationships that individuals have with the broader social context.

- second, it is evident that when investigating people's orientations toward travel issues including urban cycling, it is essential to take into account the shared representations on the topic and that, in turn, such analysis should consider the various possible symbolic, emotional, material and experiential components of these representations. Focusing on either one of them alone might lead to a distorted or limited knowledge of the phenomenon.

- In addition, it is important that urban travel styles are always analyzed as parts of broader urban and social life styles (not like isolated personal choices made in an empty parallel universe). This means that when radical changes in travel styles are required in a population, studies directed at identifying the factors able to prompt the adoption of such changes should also analyze the implications for all related aspects at the individual,

interpersonal and societal level. This is especially necessary if changes are requested and needed within a short time frame.

- It is important to bear in mind that urban streets (and, likely, roads in general) are not neutral terrains of human interaction regulated by official or mechanical rules only. Although the empirical evidence suggests the existence of various automatisms, road behavior is also influenced by several informal social rules that still need further investigation. On one hand, this means that further studies are needed to better understand the sociocultural aspects that affect interactions among road users and their implications for crucial phenomenon such as travel mode choice and road safety. On the other hand, this suggests that urban planners should dedicate greater attention to the way in which mobility solutions affect citizen's overall social lives.

- The results of our studies are, then, in contrast with another recurring tendency in the traditional approaches to the analysis of travel demand, one that looks for transversal and universally valid motivational explanations for human choices. Our studies suggest that although many aspects of mobility motivation might be homogeneously shared, others might vary as a function of a number of several experiential, geographical and sociocultural factors. Hence, collecting differential data becomes as important as collecting information about recurrent and shared aspects.

- Finally, it seems that there is a strong association between the social representation of travel issues and the discourse in the media, and this association might be stronger for those who have no direct experience with the phenomenon. The relationship between travel choice and media is another under-investigated research field at the academic level, and their impact on urban mobility appears largely neglected by urban planners.

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