# ORCA – Online Research @ Cardiff

# A Theories of Practice Perspective in Understanding Barriers to Sustainable Commuting: The Case of UAE

**Shilpa Iyanna**[1]**, Carmela Bosangit**[2]**, Jordon Lazell**[3] **and Marylyn Carrigan**[4]

[1]College of Business, Abu Dhabi University, Post Box # 59911, Abu Dhabi, United Arab Emirates

[2]Cardiff Business School, Cardiff University, Aberconway Building, Colum Drive, Cardiff CF10 3EU UK

[3]Centre for Business in Society, Coventry University, Priory Road, Coventry, CV1 5FB

[4]Keele Management School, Darwin Building, Keele University, Keele, Newcastle ST55SR

**Corresponding Author Details**

Email: Shilpa.iyanna@adu.ac.ae

Telephone: 0097125015664

Postal Address: College of Business, Abu Dhabi University, Post Box # 59911, Abu Dhabi, United Arab Emirates

**Abstract**

A critical step to mitigate climate change is to reduce automobile pollution emissions. The transportation sector produces 23% of world energy-related CO2 emissions with three-quarters of the emissions coming from road transport, specifically passenger cars and light-duty trucks. The daily commute constitutes a significant portion of the traffic demand in cities, as people's use of private cars remains an integral part of daily life. Using theories of practice, this paper investigates the range of elements (meanings, competencies and materials) that collectively shapes the practice of daily commuting. Adopting a qualitative approach, the research comprises 21 interviews with UAE residents. Our findings reveal two major insights: (1) "meanings" play a more dominant role in shaping the practice of daily commuting, thus, competencies and materials are integrated in a way that addresses these meanings; and (2) practices are simultaneously interconnected with other practices and often compete for the finite resources of consumers. The paper provides insights to the barriers to sustainable commuting practices and outlines significant opportunities for intervention.

## 1. Introduction

Transport is a major cause for air and noise pollution, and significantly contributes to climate change (Batty *et al.*, 2015; UN, 2013; Banister and Thurstain-Goodwin, 2011; Oskamp, 2000). The transport system could play a central role in reducing global greenhouse gas emissions (Cass and Faulconbridge, 2016; Schwanen *et al.*, 2011; Cohen, 2010). Emissions from global transportation will likely grow by 60% between 2015 and 2050 with the number of motor vehicles on the road predicted to increase from 1 billion in 2015 to 2.5 billion in 2050 (ITF, 2017). Historically there is a close correlation between growth in Gross Domestic Product (GDP) and growth in transport (Banister and Stead, 2002). As per capita income levels increase, so does reliance on private vehicles to meet mobility needs, a trend especially observed in emerging economies. As the transport sector has significant and long-lasting economic, social and environmental impacts, it is an important dimension for future sustainability.

The context chosen for this study is the "daily commute", the regular, routine and repeated journey (initially associated with public transport but now also with the car) between home and work (Lyons and Chatterjee, 2008). Heisserer and Rau's (2015:1) refer to commuting as "the consumption of distance that is a socially and culturally significant practice that is contingent upon diverse material and infrastructural conditions and that shows significant variations in how it manifests itself both temporally and spatially". Commuting constitutes a significant portion of the traffic demand in cities. Encouraging higher capacity public transportation as opposed to private modes represents a major step

3

towards the reduction of C02 levels (Jia *et al.*, 2015). However, this presents a major challenge as people's use of private cars remains an integral part of daily life as they offer convenience, flexibility, personal space and an aspirational symbol of status in the society (Batty *et al.*, 2015). This implies that the "daily commute" cannot be conceptualized "as a singular behaviour but rather as a diverse practice of everyday social life" (Ingold and Vergunst, 2006:67). Heisserer and Rau (2015) assert that everyday mobility (commuting) should be considered as a collectively negotiated consumption practice in which social relations, material infrastructure and contexts are intrinsic to the performance of social practices (e.g. Hobson, 2003; Shove, 2003; Southerton *et al.*, 2004; Nye and Hargreaves, 2010; Hargreaves, 2011). This perspective challenges existing explanations of travel behaviour that tend to over-attribute individual choice and underestimate social conditions and context in everyday commuting (Heisserer and Rau, 2015).

Hence, we argue that a practice-based approach provides a new and more balanced way to the study of commuting behaviour (Spaargaren, 2003, 2011; Shove, 2003; Southerton *et al.*, 2004) as it allows for the conceptualising of commuting behaviour as a series of actions that integrate material, (infra) structural factors and socio-cultural influences, currently overlooked in the mainstream literature on transport behaviour research (Heisserer and Rau, 2015). Further, taking this approach recognises the relevance of affective aspects, including people's emotional attachment to their particular mode of transport and resulting barriers to change (Shove, 2010; Heisserer and Rau, 2015). To date, theories of practice have mainly been used to study a broad range of concerns across generalised social phenomena and arrangements

4

grounded in the lifestyles of Europeans and Americans. This leaves a significant gap to explore behaviours based in alternative, under-researched societal contexts, where traditional assumptions and understandings about commuting may manifest differently. Transport choices are steeped in cultural and societal perceptions hence it is important to understand these latent drivers of behaviour to be able to promote sustainable transportation (Ashmore *et al.*, 2018).

As a young emerging economy, the United Arab Emirates (UAE) has become a major economic power in the region; its Gross Domestic Product (GDP) grew from $14.7 billion in 1975 to $403.198 billion in 2014 (World Bank Data, June 2016). This growth and development has driven up environmental degradation; figures suggest that if everyone on the planet consumed as much as the average United Arab Emirates (UAE) citizen, 5.4 Earths would be required to support the demand (Global Footprint Network, 2012). Vehicle density in Dubai is amongst the highest both in the region and in the world with average annual increase of vehicles at 8.2% (Shahbandari, 2015). It is predicted that if this rate continues, Dubai will have 2.222 million vehicles in year 2020 (Shahbandari, 2015). Although UAE has been ranked very highly in terms of road quality, it lags behind other nations when it comes to road safety and traffic congestion. For instance, in 2016 drivers spent 11 percent of their driving time sitting in congestion (Webster, 2017). Congestion related problems include increased fuel consumption, decreased productivity, adverse health effects due to air pollution, accidents, and traffic noise (Greene and Wegener, 1997; Peters *et al.*, 2004), in addition to climate change exacerbation due to high carbon dioxide

(CO2) emissions (Mees, 2000; Oskamp, 2000) (see Liebebroth, Jensen and Bredahl, 2018).

Research suggests that a shift to shared modes of transportation (e.g. public transport, car sharing etc.) could have a significant positive impact (Heiskanen and Jalas, 2003). However, convincing commuters to adopt new forms of transport is problematic and rarely a question of infrastructure alone; other approaches are clearly needed (Liebebroth *et al.*, 2018). Any attempt to reduce the use of cars for the daily commute will be effective only when all the nuances associated with the practice of daily commuting are understood.

Using theories of practice, this paper investigates the range of elements (meanings, competencies and materials) that collectively influence the practice of daily commuting. Further, the paper seeks to explain barriers to sustainable daily commute practices. More specifically the paper aims to address the following research questions:

1. To what extent are materials, meanings and competencies associated with commuting interconnected with other everyday practices?

2. Which of the elements of practice is most influential in shaping the practice of commuting?

3. What are the barriers faced by commuters in adopting more sustainable forms of transport?

By doing so, this study helps us to better understand the challenges associated with encouraging people to use public transport rather than private cars in the UAE. Additionally, the research offers insights for policies that would help the

region move towards more sustainable transport systems.

## 2. Literature Review

### 2.1 Approaches to understanding commuting behaviour

Mainstream understanding of human (travel) behaviour has been largely dominated by two paradigms since 1970: the individualistic paradigm and the systemic paradigm (Heisserer and Rau, 2015; Spaargaren, 2011).

The individualistic paradigm is primarily based on economic and social psychological theories to explain individual behaviour. The economic approach is based on utility maximization theory (Liu *et al.*, 2016). For example, instrumental or utilitarian motives associated with driving includes the financial costs, travel time, convenience, flexibility, physical effort or exertion (Gardner and Abraham, 2007). These motives illustrate the desire to maximise the expected utility of available transport modes (Steg, 2005; Steg, Vlek, & Slotegraaf, 2001).

The socio-psychological approach ascribes behaviour to perceptual and attitudinal influences on travel behaviour such as beliefs, norms, and values (Heinen and Handy, 2012).  The focus of these theories is to explore the mental constructs and processes that mediate between stimulus and response (Kihlstrom, 1987). The most widely referenced and cited cognitive models are the Theory of Reasoned Action (Fishbein and Ajzen, 1975) and the Theory of Planned Behaviour (TPB) (Ajzen, 1985). These models received much attention because they treat cognitive components such as attitudes, beliefs, motivations and norms as "situation invariant orientation patterns" (Bamberg,

2003:22). This implies that if the cognitive components can be identified and modified, behavioural changes will cascade across all areas of an individual's lifestyle (Hargreaves, 2011). For example, the travel mode choice can be influenced by experience of driving and perceived stress, excitement, uncertainty, safety, enjoyment and autonomy (see Gardner and Abraham, 2007; Lanzini and Khan, 2017). There is skepticism however, as to whether attitudes can be considered as valid predictors of behaviour. Evidence suggests there is a gap, as attitudes do not always translate to behaviour: hence the 'attitude-behaviour gap' (Boulstridge and Carrigan, 2000; Carrigan and Attalla, 2001; Sheeran, 2002). Cognitive models have responded with frameworks such as motivation-opportunity-ability (MOA) (Thøgerson, 1995), which utilises ability (ability to behave in a specific way) and opportunity (that would allow the individual to act on his/her intention) as moderators of the relationship between attitude and behaviour. Such work however still falls short of contextualising behaviours with both the economic and socio-psychological approaches to consumer behaviour being excessively individualistic and failing to appreciate the ways in which social relations, material infrastructure and contexts are intrinsic to the performance of social practices (Hobson, 2003; Nye and Hargreaves, 2010; Southerton, 2012) and not merely variables among many others within an individual's decision-making process (Hargreaves 2011).

The individualistic paradigms "fall short on understanding certain complexities of travel behaviour" (Carrasco and Farber, 2014:1). Heisserer and Rau (2015:4) list several limitations to the individualistic approach to understanding travel behaviour. First, different modes of transport are associated with social and cultural meanings that go beyond a person's affect attachments. To understand

8

people's travel patterns and choices it is crucial to understand the social functions and meanings associated with everyday mobility. Second, individualistic approaches ignore the social nature of human travel behaviour, where a person's travel choice could be influenced by other people's needs, expectations, opinions and skill. Third, commuting practices are influenced by (infra)structural aspects such as transport policy, infrastructure, laws and regulations. However, individualistic approaches fail to explain the structural influences on travel behaviour and have been linked to wider failures in environmental policy (Shove, 2010). This suggests a need to move beyond the narrow individualistic explanations of commuting behaviour.

The systemic paradigm shifts the focus from the individual to the system and is based on the premise that travel behaviour can be influenced with the introduction of regulations, appropriate infrastructure and technology. For example, interventions such as increasing car parking prices, introducing a travel congestion tax, or instigating road closures could nudge alternative travel choices (Fuji *et al.*, 2001; Thøgersen, 2009; Leonard, 2008). However, the systemic approach which focuses exclusively on infrastructure to change travel behaviour fails to recognize the role of individual agency in explaining commuting patterns (Cass and Faulconbridge, 2016; Mattioli *et al.*, 2016)

Both the individualistic and systemic approaches are criticised for their limitations in explaining human (travel) behaviour (Liu *et al.*, 2015). Although research acknowledges the complex, multifactorial nature of travel choice (Nkurunziza *et al.*, 2012), existing literature on commuting does not adequately address the unique form of travel (behaviour) (Cass and Faulconbridge, 2016).

Characterizing the complexity of daily commuting routines is challenging because of variation between individuals and variation for the same individual from one day or week to another (see Lyons and Chatterjee, 2008; Dix *et al.*, 1983). Social scientists are calling for a more balanced approach in studying human (travel) behaviour that focuses on both on the individual and the structure (Spaargaren, 2011).

## 2.2 Theories of Practice: as an alternative approach

Practice as a theory, approach and a way of thinking is gaining traction in consumption studies and transport research (Corradi *et al.*, 2010; Hesserier and Rau, 2015; Cass and Faulconbridge, 2016; Mattioli *et al.*, 2016). Theories of practice offers a lens to understand the social world through conceptualising behaviour via a series of actions as practices that contain elements that recursively utilise agentive (i.e. individualistic) and structural (i.e. systemic) thinking (Gidden, 1984). For theories of practice, the micro is no longer relative to individual interactions, and instead a recursive relationship between structure and agency is put forward which allows behaviour to be placed within the context of wider societal processes (Giddens, 1984). The practice, in this case commuting, becomes the unit of analysis rather than at the individual or systematic level as in other paradigms, bringing to the forefront how the arrangements and configurations of practices shape travel behaviour.

The conceptualisation of a 'practice' covers several different 'ways of knowing' that can be expressed via doings and sayings embedded within everyday lives (Schatzki, 2001). Reckwitz's (2002:249) definition of practice reflects this: "A practice (*Praktik*) is a routinized type of behaviour which consists of several

elements, interconnected to one other: forms of bodily activities, 'thing's and their use, a background knowledge in the form of understanding, know-how, states of emotion and motivation knowledge". Appropriating knowledge from practices is achieved through understanding practices as performances: the performative, in the moment actions, doings and sayings of how a practice is carried out; and secondly as an entity, an identification of a unit of a shared and collective behaviour (Warde, 2016).

Despite there being no one unified practice-based approach, Shove's *et al.*, (2012) model has proven popular in studying consumption given the theoretical potential to comprehend the interlinking nature of consumption activities (Halkier *et al.*, 2011; Keller *et al.*, 2016). For this paper we draw on the 3-Element Social Practice Framework proposed by Shove et al. (2012) and additional literature on what conditions and shapes practices to build a practice based 'toolkit' to examine commuting. According to Shove *et al.*, (2012:24) "practices are defined by interdependent relations between materials, competences and meanings". This framework is used for analysis in this study and is presented in Figure 1.

**Insert Figure 1 here**

The framework breaks down practice into three core elements – material, competences and meaning. Materials include objects, tools and infrastructure (Shove *et al.*, 2012). The materials linked to commuting practices include cars, buses, roads and associated infrastructure, petrol stations etc. (Cass and Faulconbridge, 2016; Cairns *et al.*, 2014; Geels, 2005; Urry, 2004). Competences include what Schatzki (1996) refers to as "understanding" and

"rules" as well as knowledge, technique and embedded skills (Shove *et al.*, 2012). From a transport perspective, this includes knowing how to drive a car, the ability to maintain and repair cars, or safely negotiate traffic, while using buses requires time-table reading and 'hailing' know-hows (Cass and Faulconbridge, 2016; Cairns *et al.*, 2014). Meaning refers to how practices are both socially and culturally negotiated, representing norms of acceptable ways of undertaking a practice. This includes symbolic meaning, ideas and aspirations that are relevant to practice (Shove *et al.*, 2012). It must be stressed that despite their lexicon, aspects of the practice theoretical toolkit such as competence and meaning that would traditionally be associated with the individual, do in fact span both agentive and structural knowledge. With respect to meaning, Shove *et al.,* (2012:54) explains that "by participating in some practices but not others, individuals locate themselves within society and in so doing simultaneously reproduce specific schemes and structures of meaning and order". Meanings are defined and classified according to different actors as part of how practices emerge, circulate and decease.

Individuals perform practices in ways they and others value and consider legitimate (Nicolini, 2012). Certain travel modes are associated with negative meanings. For example, allowing children to bike to school is perceived by some as risky behaviour and bad parenting (Matiolli *et al.*, 2016). Collectively these elements manifest as practices, the ways in which these elements link together reflects the complexities of both how the practice itself is performed and how practices act as resources for other practices (Nicolini, 2012).

## 3. Methodology

As this study attempts to "understand people's motivations and views about complex issues such as emissions and travel mode choice, where we lack sufficient understanding to know exactly what ought to be measured quantitatively, qualitative methods can provide novel insights to guide future research" (Thomas *et al*., 2014:73). Qualitative research allows for in-depth exploration of contextual factors and underlying motivations that lie behind 'unthinking' routines (Lucas, 2013; Schwanen et al., 2011). Our aim was to reveal the richness of the interconnectedness between meanings, materials and competencies that influence the practice of daily commute in an urban setting.

For this study, 21 in-depth interviews were conducted in two major cities of UAE, namely, Dubai and Abu Dhabi. The participants comprised of 10 Emiratis and 11 expatriates who were recruited via snowballing technique which is commonly used in qualitative research (Simons *et al*., 2014). Expatriate nationalities were drawn from a number of countries (for example, USA; Canada; Jordan; Philippines; India) therefore their views represent a culturally heterogeneous population, but one that is indicative of the expatriate experience. Table 1 presents the summary of the profile of participants for the study, pseudonyms were used to anonymise the participants.

**Insert table 1**

Participants were asked about all modes of travel (car, bus, metro) regardless of whether they were not regular users, to explore reasons for use and non-use and the contextual factors influencing their daily commute practice (Cass and Faulconbridge, 2016). Interviews lasted between 45 minutes to an hour and were recorded and then transcribed verbatim. A directed qualitative content analysis enabled the selection and categorization of the accounts of the participants based on the 3-element framework of Shove *et al.*, (2012). The analysis involved a 'zooming in' process (Nicolini, 2012), drawing upon participants interview transcripts as reflective accounts of their commuting practices. The first phase focused on identifying materials related to the daily commute (cars, bus, metro, carpooling etc.). The second and third phase extracted meanings and competencies associated with each material. Within the second and third phase, thematic analysis was conducted because it showed important themes that highlight similarities and differences in meanings and environmental competences. Data saturation occurred within the first 14 interviews, with no new themes, issue, concepts, categories, and linkages emerging (Hennink *et al.*, 2017). Discussion and agreement of codes, definition and coding rules were undertaken throughout the three phases. Nvivo software was used to facilitate the coding informed by practice-based analysis techniques (Halkier and Jensen, 2011). Samples in qualitative analysis are inevitably small and purposive, selected for their capacity to provide richly-textured information, relevant to the phenomenon under investigation (Vasileou, 2018), in this case daily commuting practice in UAE. There are inevitable limits to the generalisability of the findings, but that does not preclude our ability to draw inferences to the broader study population if not the full

spectrum of other populations and cultures. We are also able to generate understanding that has the potential to advance knowledge regarding sustainable commuting barriers, despite the relatively small sample size. Further the analysis reveals the breadth and nature of the phenomena under study (Smith, 2018).

## 4. Findings and Discussion

The narratives of participants discussing their daily commuting practice revealed that of the 3 elements specified by Shove *et al.*, (2012), meanings have a more dominant influence on commuting behaviour, particularly in relation to the use of different transportation modes. Applying theories of practice to mainstream transport research has primarily focused on materials (e.g. vehicles) and competencies (e.g. driver education); meanings on the other hand has received less attention (Cairns *et al.*, 2014:109). However, understanding "meanings" and symbolism associated with the daily commute are important, as "symbols are powerful because they are at the root of how we interpret the world around us … products like automobiles symbolise more than just social status, stereotypes or social roles: they can signify an aspect of identity" (Heffner *et al.*, 2006: 3; 31-32). Meanings play an important part in the performance of practices through representing "the social and symbolic significance of participation in any one moment" (Shove et al. 2012:23). Shove et al. (2012:55) argue that meanings persist in practices through "dynamic processes of association" such as how certain ways of going about actions, in this case commuting, become associated with specific values and ideas. Meanings have recursive implications for both how practices are performed and

how performances are interpreted by others. Meanings are therefore appropriated, decoded and classified in further performances and in how a practice as an entity is configured, dissipates and continues to exist.

An in-depth examination of meanings associated with the practice of daily commute allowed us to broadly categorize these into socio-cultural, symbolic and personal meanings. We therefore structure the following sections around these meanings and demonstrate how they combine with materials and competencies to illustrate how the everyday commute manifests itself in daily life.

### 4.1. Socio-Cultural Meanings

Socio-cultural meanings reflect how commuting practices are influenced by social and cultural group memberships. In UAE, the mode of transportation has acquired potent socio-cultural meanings. Public transport is often associated with a social stigma that is culturally unacceptable, as illustrated in the quotes below:

> *"using the public transport is not our prestige, we always try not to use the public transport … Culturally, I would say here people don't accept that I (as a female Emirati) would be on a public bus with other nationalities" (Aadila, Emirati, married)*

> *"I think if it would be more female friendly and more you know, local friendly. I don't want to look like a stranger … standing in a bus, the only one who is doing it. I had an incident when I really needed it (public transport), but then I feel really strange … I need to cover my*

*face, not to be recognised … Although when I travel abroad I just use*
*the public transportation, I don't have a problem with it" (Samaira,*
*Emirati, married)*

*"we cannot have a guy who is just shuffling every day (daily wage*
*worker), using the transport with a guy who has finished his meeting*
*(with a) VIP, it's so difficult. Besides we are working to have money*
*to relax, we cannot save the environment and save my money, it's*
*not applicable" (Kabir, Emirati, married with kids)*

*"So last weekend I went to Dubai and I took a bus. And one of the people*
*I saw was one of our sponsors and he was like that's ridiculous how do*
*you not have your own car…I feel like people have a really bad image of*
*taking public transport." (Beth, Expat, single)*

*Yes, I use public transport both bus and metro. It is a lot more convenient*
*because there is less traffic and we know when we will reach our place*
*(i.e. destination) … because everything is timed. (Mary, Expat, single)*

These findings align with research that provides evidence of how in some
cultures using buses and other means of public transport are often stigmatized
(Ory and Mokhtarian, 2005; Vanderbilt, 2010). Referred to as "loser cruisers,"
buses are sometimes portrayed as undesirable and inferior travel modes
(Litman, 2011). Although not explicitly expressed by participants, cars are
powerful expressions of personal identity as well as status (Woods and Matsoff,
2017). Indeed, both expats and Emiratis attest to the use of public

transportation as strong symbols of social classes within these big cities. However, as illustrated in the quotes above, Emirati women were more sensitive to the social stigma associated with public transport (i.e. "not our prestige") and further justify it with feelings of being uncomfortable and unsafe. This manifests as "fear-based exclusion" where some members of the society (i.e. Emirati women) might be fearful of certain public spaces or transport facilities" (Chruch *et al.*, 2000:199). The bus system in UAE seems to be "catering overwhelmingly to the low-income expat segments" (pg. 469) that is greatly overrepresented with a few ethnic and national identities (Qamhaieh and Chakravarty, 2017) contributing to both social stigma and fear-based exclusion. However, for the expats who use public transport social stigma and fear-based exclusion did not manifest to the same extent as Emiratis. Unlike other research on transport exclusion, our study shows that exclusion was more on the basis of socio-cultural norms rather than income, employment, and educational attainment (Lucas, 2011).

In order to transition to a more sustainable transport system, policy that helps overcome the negative meanings associated with bus commuting would be helpful, including providing materials that signal high quality transit service. Competencies associated with high quality transit such as availability, frequency, travel speed, reliability, comfort, convenience and price structure, etc. (Litman, 2017) need to be conveyed to the users. This can be achieved through public engagement using a participatory approach with relevant stakeholders (Xenias and Whitmarsh, 2013; Arnott *et al.*, 2014). In addition, emphasis should be given to creative campaigns that address and reconfigure the socio-cultural meanings related to public transport.

## 4.2 Symbolic Meanings

Symbolic meanings in this context relate to the social signals which influence transportation consumption practices; the shaping of social identity, and our understanding of what constitutes a good life (Ger *et al.*, 1998; Clancy and O'Loughlin, 2002). Data reveals that underlying symbolic meanings such as freedom and independence explain the preference for cars over public transportation. Freedom and independence not only refer to physical movements or mobility but are also associated with how it facilitates participants to perform roles in other practices (e.g. working; socialising; being a mother) that are bundled together as part of their everyday lives (Watson, 2012). "For women who are mothers the car not only facilitates the mobility required to satisfy the children's spatially dispersed activities" (Dowling, 2015:532) but also helps to accommodate employment and other household responsibilities. The symbolic meaning associated with these diverse roles can restrict the time available for mothers/parents to meet their own and their child's travel demands, thereby significantly influencing their travel mode choices (Dowling, 2015) as illustrated in the quotes below:

> *"I feel like if I didn't drive I wouldn't have been able to work as easily, I would be stuck at home, like so many things would have affected so driving gave me the freedom to do so much more, yes maybe I am hurting the environment in one way but I am also doing so many good things…so it's like opportunity cost" (Mersiha, Emirati, married: new mum)*

> *"I drive a car, actually I got my licence 2 years back, all that time I was depending on my husband. …now I do everything…because I have kids*

*and sometimes I want to take them somewhere…the more kids I have the more places I wanted to go and it was not available at that time, sometimes the kids were sick and he was not there, so that's why...after I got my car and my licence I don't depend on him". (Sabiha, Emirati, married with kids)*

These quotes reflect studies on gender differences and mobility which recognize that commuting is not limited to work but includes household responsibility as well (such as, shopping; picking up children, medical issues and visiting family and friends) (Olmo and Maeso, 2014; Sanchez and Gonzalez, 2016). Our results suggest that car ownership has a higher symbolic meaning of freedom, independence and good parenting for women. The manifestation of symbolic meanings is interwoven with competencies such as the ability to drive (and the multiple competencies it represents) (Cass and Faulconbridge, 2016).

These findings also imply that encouraging the reduction of car use or promoting public transportation may not yield the desired results as sustainable options may conflict with socially contextualised symbolic meanings appropriated to the individual, the home, and the larger urban and national society (Shaw *et al.*, 2017; Chatzidakis and Shaw, 2018). It is challenging to encourage people to adopt new commuting behaviours even with improved facilities as it is habitual, repeated and with little or no conscious consideration of alternatives (Garnder, 2009; Clark *et al.*, 2016). Therefore, transitioning to a sustainable transport system calls for technological innovation that enables

greener mobility practices whilst recognising the symbolic meanings associated with some forms of transport (e.g. driving).

The meanings attached to a more environment friendly forms of driving, such as those linked to electric cars, have made little leeway in re-configuring vehicle-based commuting.

> *"Yes, we are responsible because we know that our cars are affecting the environment badly, but what to do? We don't have alternatives. We cannot stop going to school or to work ... If the country provides us with it, even if it's not free, electric cars for example, we will use them"* (Mersiha, Emirati, married: new mum)

Driving as a practice holds meanings associated with the negativities that come from using a fossil fuel-based transport mode. Whilst such vehicles have the potential to reduce greenhouse gas emissions and increase fuel efficiency (Krupa *et al.*, 2014), the symbolic meaning associated with electric cars were currently closer to the image and social prestige (see Ashmore *et al.*, 2018). On one hand the provision of materials (e.g. electric cars, enhanced information technology for cars) will create greater opportunities for more sustainable forms of vehicle use. However, reconfiguring symbolic meanings associated with the practice of driving are critical to moving towards a more sustainable personal vehicle use, and can be more effective in increasing the number of journeys made by electric and hybrid vehicles.

### 4.3 Personal Meanings

In this paper, personal meanings refer to those aspects that have "personal significance" (Wong, 1989) and are closely related to the functions of transportation in everyday life. As the practice of daily commuting is bundled together with other practices as mentioned above, there is a need for participants to manage their finite resources (e.g. time and money). Our findings show that personal meanings manifested because of the pressures placed on these resources. As He *et al.*, (2016:2) observe, an increase in commuting time inevitably affects participation in other activities (e.g. recreation, family activities and maintenance) that will have an impact on commuters' wellbeing (stress, comfort and satisfaction) and efficiency. In addition, physical discomfort is exacerbated by the extreme weather conditions in UAE. Inconvenience and physical discomfort are closely associated with materials such as inadequate infrastructure, lack of a dense interconnected network and unreliable bus schedules. These points are emphasised in the quotes below:

> "*The bus? You must be joking … if I need to get to my destination in 20 minutes, I will only get there in an hour and a half … if I miss the bus, you can say goodbye ... So again, somebody needs to improve our transportation system" (Janet, Expat, single)*

> "*It's expensive (school bus) … it would be much cheaper if you have full time driver. We're paying like AED 1,500 ($415) monthly (per child), imagine if you have five kids" (Misha, Emirati, married with kids)*

> *I have 3 cars… and I can safely say I use my car 100%, there is nothing I do the minute I step out of the house, is with my car, I don't do walking*

*to the supermarket or something especially in the summer. If I (could) I would put my car in the living room just to avoid the 2 steps outside (Sameed, Emirati, married with kids)*

Another dimension of personal meaning that was expressed by participants was the 'recreational value' of using the metro (i.e. using the metro for its novelty value), as illustrated below:

*"I've used it once or twice in Dubai only as recreation. I wanted to know what it's like" (Yasmin, Expat, married with kids)*

*"I used it for the experience, so if someone asks me have you ever used the metro I (can) say yes …, but to make it my family transport, no, I don't think there is a chance … I feel that we are still not at that stage for someone to say, you know what the system is so good I don't even know why I am taking my car" (Sameed, Emirati, married with kids)*

The metro was a relatively new mode of transport that was introduced in Dubai (in 2010) and as a result it represented a "novelty in use" meaning. However, as Sameed states for metro (and bus) to become a regular mode of transportation, strategy and policy emphasis should focus on providing associated materials such as more stations, more metro lines, with an integration of public transport systems (Litman, 2017). If public transport offered the temperature comfort and heat avoidance afforded by the car this might help public transport recruit more daily commuting practitioners.

Lastly, carpooling is emerging as an eco-friendly and sustainable alternative mode of transport (Galland *et al.*, 2014). However, carpooling was reported as being inconvenient and requiring commitments from car-poolers.

*"I tried (i.e. carpooling) but it's difficult to get commitment from other people … you never know each day has its own circumstances.  For example, if you have 5 people then it's really dependent on 5 people, all 5 people should be on time, otherwise 5 people will get affected. From an environmental point of view, it's very good, but productivity and practicality … I don't see it happening, unless you have a grace period of half an hour. For example if your work starts at 8 and you have decided that everyone should gather at 7.30 half an hour to get to work that should now be changed to 7, so you have a 30 minute gap for people who are late or something and then you have to wake up at 6am, you have to wake up earlier. It's tiring, carpooling is tiring.  It works better with lower numbers but for example 2 people, but that doesn't really do anything for the environment, it's better to remove 5 cars from the road than 1 car from the road"* (Sameed, Emirati, married with kids)

Sameed's account succinctly captures the complexities of carpooling as a practice and emphasizes the interconnectedness of practices in everyday life. Therefore, transition to a more sustainable transport system needs to recognise the other practices which are sequenced with commuting (Cass and Faulconbridge, 2016; Chatzidakis and Shaw, 2018).

Another issue raised with carpooling in UAE is with regards to competencies:

*"First of all, the regulation is so strict, you have to register yourself if you want to car pool and all that. …. car pool is illegal. Unless you can prove that that person is actually a family member, or a friend ... I don't know how you can prove that he's a friend, so it's only family members that they can check. The regulation does not allow you to use car pools so easily." (Samuel, expat, married with kids)*

Although Sameed points out the environmental competencies related to carpooling, Samuel highlights the regulatory restrictions that hinder the practice here in the UAE. In addition, the possible legal consequences of unregistered carpooling make the practice even less attractive. Carpooling as a strategy (Tukker, 2004; Cass and Faulconbridge, 2016) needs to take a holistic view of the elements of practice as well as the interconnected nature of practices.

To summarise, Table 2 presents the range of elements (meanings, competencies and materials) that collectively illustrate the practice of daily commute. As our findings reveal, meanings are particularly important given the associations participants draw with different commuting modes such as how public transport is differentiated with personal car use.

**Insert table 2 here**

5. **Conclusion**

Recognizing the significance of daily commuting to everyday life and as a complex behaviour, the paper illustrates the range of elements (meanings, competencies and material) that collectively shapes the practice of daily

25

commute. To date, very few studies both on transport policy and mainstream transport research have been based on the concept of theories of practice (Cairns *et al.*, 2014). The approach taken in this study has two implications that generate insights on the barriers in the transition towards a more sustainable daily commute practice.

First, the practice perspective shows that "meanings" play a dominant role in shaping the practice of the daily commute. Our findings emphasis that meanings associated with the purchase and use of any mode of transport should not be underestimated as they are linked with the process of identity creation and/or self-expression (Cairns *et al.*, 2014). A change in behaviour can be expected only when competencies and materials are integrated in a way that addresses the meanings. For example, to overcome the negative meanings (both personal and socio-cultural) associated with public transportation, emphasis should be given to providing material elements that will make the use of public transport less inconvenient and more productive; or materials that signal high quality transit (Cass and Faulconbridge, 2016). Within the field of social marketing, commercial marketing techniques such as role model and celebrity endorsement have been leveraged to provide solutions to social problems (Hanna et al. 2018; Hall, 2014). To overcome negative meanings associated with public transport, governments could use role model advocacy and celebrity endorsement to focus on socially organised habits, routines and other shared practical understandings (Luzecka, 2016; Cetina, Schatzki, & von Savigny, 2005) that could then induce changes to cultural and social norms in the wider society (Hanna et al. 2018).

In addition, a public transport gender audit could help assess how local transport provider or local authority meets women's transport needs. This could inform policy aimed at improving the gender balance and address of fear-based exclusion among women (Hamilton and Jenkins, 2000). Further, competencies associated with high quality transit such as availability, frequency, travel speed, reliability, comfort, convenience and price structure, etc. (Litman, 2017) need to be conveyed to the users.

Research has frequently illustrated the unique and hedonistic value of owning and travelling by car rather than any other mode (for example, Jensen, 1999; Maxwell, 2001; Sheller, 2005). Car ownership is often status-related and may cause consumers to engage in practices that are less optimal (van Buren *et al.*, 2016). Therefore, it is important to understand the meanings (ethics) "associated with car use in everyday life, and the intense negotiations between these ethical stances (Maxwell, 2001:212), such that social and environmental concerns inevitably interact with positive meanings of car use" (Cairns *et al.*, 2014:111). Car ownership in the context of daily commuting is associated with status, freedom and independence, which may inhibit transitioning into a sustainable transport practice. As Shove (2010:1278) notes "transitions towards sustainability do not depend on policy makers persuading individuals to make sacrifices … instead, relevant societal innovation is that in which contemporary rules of the game are eroded; in which the status quo is called into question; and in which more sustainable regimes of technologies, routines, forms of know-how, conventions, markets, and expectations take hold". We therefore suggest that government and businesses recognise this and invest in materials and competencies that will aid the realignment and circulation of

symbolic meanings associated with public transport to overcome current barriers of commuting via this mode.

Second, our analysis shows how the practice of daily commuting is simultaneously interconnected with other practices and often competes for the finite resources of individuals. Understanding the detailed bundling of practices in everyday life may provide significant opportunities for intervention (Watson, 2012). We suggest the need to take on a holistic view in terms of the interconnectedness of practices as commuting is a significant part of daily life and defines how individuals coordinate other practices such as shopping for goods. Any change in the practice will affect other practices that can impact on wellbeing and inhibit transitioning to a sustainable transport system.

Although this study is limited to a qualitative account of consumption within a very particular non-western, socio-cultural and infrastructural landscape, it provides new understanding of UAE's heterogeneous population and their commuting practices. These findings add voice to the need for more 'place-based and contextualised understandings' (McEwan *et al*., 2015:241) of consumption, particularly within the global South. Similar studies in other countries (for example Qatar, Kuwait and Singapore which also host large expatriate work forces) and within different contexts (such as household food waste or energy consumption) would produce a more nuanced account of daily commuting.  Studies that reveal specific place experiences or tease out the complex social relations, climatic conditions and infrastructure barriers that underpin consumption practices in global South contexts would help address

some of the generalisations and simplistic narratives that characterise much of what is written on sustainable transport behaviour.

**References**

Arnott, B., Rehackova, L., Errington, L., Sniehotta, F.F., Roberts, J. and Araujo-Soares, V., 2014. Efficacy of behavioural interventions for transport behaviour change: systematic review, meta-analysis and intervention coding. *International journal of behavioral nutrition and physical activity*, *11*(1), pp.133.

Ashmore, D.P., Pojani, D., Thoreau, R., Christie, N. and Tyler, N.A., 2018. The symbolism of 'eco cars' across national cultures: Potential implications for policy formulation and transfer. *Transportation Research Part D: Transport and Environment, 63*, pp.560-575.

Banister, D., Thurstain-Goodwin, M., 2011. Quantification of the non-transport benefits resulting from rail investment. *Journal of Transport Geography 19*, pp.212–223.

Banister, D. and Stead, D., 2002. Reducing transport intensity. *European Journal of Transport and Infrastructure Research 2 (3/4),* pp.161-178.

Batty, P., Palacin, R. and González-Gil, A., 2015. Challenges and opportunities in developing urban modal shift. *Travel Behaviour and Society, 2(2),* pp.109-123.

Boulstridge, E. and Carrigan, M., 2000. Do consumers really care about corporate responsibility? Highlighting the attitude—behaviour gap. *Journal of communication management*, *4*(4), pp.355-368.

Cairns, S., Harmer, C., Hopkin, J. and Skippon, S., 2014. Sociological perspectives on travel and mobilities: A review. *Transportation research part A: policy and practice*, *63*, pp.107-117.

Carrasco, J.A. and Farber, S., 2014. Selected papers on the study of the social context of travel behaviour. *Transportation Research Part A: Policy and Practice*, *68*, pp.1-2.

Carrigan, M. and Attalla, A., 2001. The myth of the ethical consumer–do ethics matter in purchase behaviour?. *Journal of consumer marketing*, *18*(7), pp.560-578.

Cass, N. and Faulconbridge, J., 2016. Commuting practices: New insights into modal shift from theories of social practice. *Transport Policy*, *45*, pp.1-14.

Cetina, K.K., Schatzki, T.R. and Von Savigny, E. eds., 2005. *The practice turn in contemporary theory*. Routledge.

Chatzidakis, A. and Shaw, D., 2018. Sustainability: Issues of Scale, Care and Consumption. *British Journal of Management, 29(2),* pp.299-315.

Church, A., Frost, M. and Sullivan, K., 2000. Transport and social exclusion in London. *Transport policy*, *7*(3), pp.195-205.

Clancy, D. and O'Loughlin, D., 2002. Identifying the 'energy champion': A consumer behaviour approach to understanding the home energy conservation

market in Ireland. *International Journal of Nonprofit and Voluntary Sector Marketing*, *7*(3), pp.258-270.

Clark, B., Chatterjee, K. and Melia, S., 2016. Changes to commute mode: The role of life events, spatial context and environmental attitude. *Transportation Research Part A: Policy and Practice, 89,* pp.89-105.

Cohen, M.J., 2010. Destination unknown: pursuing sustainable mobility in the face of rival societal aspirations. *Research policy, 39,* pp.459-470.

Corradi, G., Gherardi, S. and Verzelloni, L., 2010. Through the practice lens: Where is the bandwagon of practice-based studies heading? *Management learning, 41(3)*, pp.265-283.

Dix, M.C., Carpenter, S.M., Clarke, M.I., Pollard, H.R.T. and Spencer, M.B., 1983. *Car use: A social and economic study* (No. Monograph).

Dowling, R. 2015. Chapter 35: *Parents, children and automobility: Trends, challenges and opportunities*. In R. Hickman, M. Givoni, & D. Banister (Eds.), Handbook on transport and development (pp. 526–538). Cheltenham: Edward Elgar.

Fujii, S., Gärling, T. and Kitamura, R., 2001. Changes in drivers' perceptions and use of public transport during a freeway closure: Effects of temporary structural change on cooperation in a real-life social dilemma. *Environment and Behavior*, *33*(6), pp.796-808.

Galland, S., Knapen, L., Gaud, N., Janssens, D., Lamotte, O., Koukam, A. and Wets, G., 2014. Multi-agent simulation of individual mobility behavior in

carpooling. *Transportation Research Part C: Emerging Technologies, 45,* pp.83-98.

Gardner, B., Abraham, C., 2007. What drives car use? A grounded theory analysis of commuters' reasons for driving. *Transportation Research Part F 10 (3)*, pp.187–200.

Gardner, B., 2009. Modelling motivation and habit in stable travel mode contexts. *Transportation Research Part F: Traffic Psychology and Behaviour, 12(1),* pp.68-76.

Geels, F.W., 2005. *Technological transitions and system innovations: a co-evolutionary and socio-technical analysis.* Edward Elgar Publishing.

Ger, G., Wilhite, H., Halkier, B., Læssøe, J., Røpke, I. and Godskesen, M.I., 1998. Symbolic meanings of high and low impact daily consumption practices in different cultures. *Consumption, Everyday Life and Sustainability,* pp.1-43.

Giddens, A., 1984. *The constitution of society: Outline of the theory of structuration.* Berkeley: U of California P.

Global Footprint Network, 2012. National Footprint Accounts, 2012 edn, Available at www.footprintnetwork.org.

Greene, D.L. and Wegener, M., 1997. Sustainable transport. Journal of *Transport Geography, 5(3),* pp.177-190.

Halkier, B. and Jensen, I., 2011. Methodological challenges in using practice theory in consumption research. Examples from a study on handling nutritional

contestations of food consumption. *Journal of Consumer Culture, 11(1),* pp.101-123

Halkier, B., Katz-Gerro, T., and Martens, L. 2011. Applying Practice Theory to the Study of Consumption: Theoretical and Methodological Considerations. *Journal of Consumer Culture[online] 11 (1),* pp.3–13.

Hall, C. M. (2014). Tourism and Social Marketing. London: Routledge

Hamilton, K. and Jenkins, L., 2000. A gender audit for public transport: a new policy tool in the tackling of social exclusion. *Urban studies, 37(10),* pp.1793-1800.

Hanna, P., Kantenbacher, J., Cohen, S. and Gössling, S., 2018. Role model advocacy for sustainable transport. *Transportation Research Part D: Transport and Environment*, *61*, pp.373-382.

Hargreaves, T., 2011. Practice-ing behaviour change: Applying social practice theory to pro-environmental behaviour change. *Journal of consumer culture*, *11*(1), pp.79-99.

He, M., Zhao, S. and He, M., 2016. Tolerance threshold of commuting time: evidence from Kunming, China. *Journal of transport geography, 57,* pp.1-7.

Heffner, R., Turrentine, T., Kurani, K., 2006. *A primer on automobile semiotics. Research Report UCD-ITS-RR-06-01*. University of California-Institute of Transportation Studies, Davis.

Heinen, E. and Handy, S., 2012. Similarities in attitudes and norms and the effect on bicycle commuting: Evidence from the bicycle cities Davis and Delft. *International Journal of Sustainable Transportation*, *6*(5), pp.257-281.

Heiskanen, E. and Jalas, M., 2003. Can services lead to radical eco-efficiency improvements – a review of the debate and evidence. *Corporate social responsibility and environmental management, 10(4),* pp.186-198.

Heisserer, B. and Rau, H. 2015. Capturing the Consumption of Distance ? A Practice-Theoretical Investigation of Everyday Travel. *Journal of Consumer Culture, 17 (3),* pp.579-599.

Hennink, M.M., Kaiser, B.N. and Marconi, V.C., 2017. Code saturation versus meaning saturation: how many interviews are enough?. *Qualitative health research*, *27*(4), pp.591-608.

Hobson, K., 2003. Thinking habits into action: the role of knowledge and process in questioning household consumption practices. *Local environment, 8(1),* pp.95-112.

Ingold, T. and Vergunst, J. L., 2006. *Fieldwork on foot: perceiving, routing, socializing.* S. Coleman, P. Collins (Eds.), Locating the field: Space, place and context in anthropology, Berg, Oxford, pp. 67-85

Jensen, M., 1999. Passion and heart in transport—a sociological analysis on transport behaviour. *Transport Policy, 6(1),* pp.19-33.

Jia, N., L. Li, S. Ling, S. Ma, W. Yao. 2018. Influence of attitudinal and low-carbon factors on behavioral intention of commuting mode choice - a cross-city

study in china, *Transportation Research Part A: Policy and Practice 111,* pp.108–118.

Keller, M., Halkier, B. and Wilska, T. 2016. Policy and Governance for Sustainable Consumption at the Crossroads of Theories and Concepts. *Environmental Policy and Governance, 26,* pp.75-88.

Krupa, J.S., Rizzo, D.M., Eppstein, M.J., Lanute, D.B., Gaalema, D.E., Lakkaraju, K. and Warrender, C.E., 2014. Analysis of a consumer survey on plug-in hybrid electric vehicles. *Transportation Research Part A: Policy and Practice*, *64*, pp.14-31.

Lanzini, P. and Khan, S.A., 2017. Shedding light on the psychological and behavioral determinants of travel mode choice: A meta-analysis. *Transportation Research Part F: Traffic Psychology and Behaviour, 48,* pp.13-27.

Leonard, T.C., 2008. Richard H. Thaler, Cass R. Sunstein, Nudge: Improving decisions about health, wealth, and happiness.

Lieberoth, A., Jensen, N.H. and Bredahl, T., 2018. Selective psychological effects of nudging, gamification and rational information in converting commuters from cars to buses: A controlled field experiment. *Transportation Research Part F: Traffic Psychology and Behaviour, 55,* pp.246-261.

Litman, T. 2011. *Mobility as a Positional Good.* Implications for Transport Policy and Planning, Victoria Transport Policy Institute. Available at: http://www.vtpi.org/prestige.pdf

Litman, T., 2017. Transportation Affordability. *Transportation, 250,* pp.360-1560.

Liu, W., P. Oosterveer, and G. Spaargaren, 2016. Promoting Sustainable Consumption in China: A Conceptual Framework and Research Review. *Journal of Cleaner Production, Volume 134, Part A,* pp.13-21.

Lucas, K., 2011. Transport and Social Exclusion: Where Are We Now? Chapter 10: pp 223-244 in Grieco M., and Urry, J. (eds.) (2011) *Mobilities: new perspectives on transport and society* Surrey, UK: Ashgate Publishing Limited

Lucas, K., 2013. Qualitative methods in transport research: the 'action research'approach. In *Transport Survey Methods: Best Practice for Decision Making* (pp. 427-440). Emerald Group Publishing Limited.

Luzecka, P., 2016. "Take a gap year!" A social practice perspective on air travel and potential transitions towards sustainable tourism mobility. *Journal of Sustainable Tourism*, *24*(3), pp.446-462.

Lyons, G. and Chatterjee, K., 2008. A human perspective on the daily commute: costs, benefits and trade-offs. *Transport Reviews*, *28*(2), pp.181-198.

Mattioli, G., Anable, J. and Vrotsou, K., 2016. Car dependent practices: Findings from a sequence pattern mining study of UK time use data. *Transportation Research Part A: Policy and Practice*, *89*, pp.56-72.

Maxwell, J.A., 2012. Qualitative research design: An interactive approach", (Vol. 41). Sage publications.

Nicolini, D., 2012. Practice theory, work, and organization: An introduction". Oxford university press.

Nkurunziza, A., Zuidgeest, M., Brussel, M. and Van Maarseveen, M., 2012. Examining the potential for modal change: Motivators and barriers for bicycle commuting in Dar-es-Salaam. *Transport policy*, *24*, pp.249-259.

Nye, M. and Hargreaves, T., 2010. Exploring the social dynamics of proenvironmental behavior change. *Journal of Industrial Ecology, 14(1),* pp.137-149.

Olmo, M., & Maeso, E. 2014. Travel Patterns, Regarding Different Activities: Work, Studies, Household Responsibilities and Leisure. *Transportation Research Procedia, Vol. 3,* pp.119-128.

Ory, D.T. and Mokhtarian, P.L., 2005. When is getting there half the fun? Modeling the liking for travel. *Transportation Research Part A: Policy and Practice, 39(2),* pp.97-123.

Oskamp, S. (2000). A sustainable future for humanity? How can psychology help? *American Psychologist, 55,* pp.496–508.

Peters, A., von Klot, S., Heier, M., Trentinaglia, I., Hörmann, A., Wichmann, H. E., et al (2004). Exposure to traffic and the onset of myocardial infection. *The New England Journal of Medicine, 351,* pp.1721–1730.

Qamhaieh, A. and Chakravarty, S., 2017. Global cities, public transportation, and social exclusion: A study of the bus system in Abu Dhabi. *Mobilities*, *12*(3), pp.462-478.

Reckwitz, A., 2002. Toward a theory of social practices: a development in culturalist theorizing. *European journal of social theory, 5(2),* pp.243-263.

Sánchez, M.I.O. and González, E.M., 2016. Gender Differences in Commuting Behavior: Women's Greater Sensitivity. *Transportation Research Procedia, 18,* pp.66-72.

Schatzki, T. R. 2001. *Introduction: Practice theory.* T. R. Schatzki, K. Knorr-Cetina, E. von Savigny, eds. The Practice Turn in Contemporary Theory. Routledge, London, pp.1-14.

Schwanen, T., Banister, D., Anable, J., 2011. Scientific research about climate change mitigation in transport: a critical review. *Transportation Research Part A 45 (10),* pp.993–1006.

Schwanen, T., Lucas, K., Akyelken, N., Solsona, D.C., Carrasco, J.A. and Neutens, T., 2015. Rethinking the links between social exclusion and transport disadvantage through the lens of social capital. *Transportation Research Part A: Policy and Practice*, *74*, pp.123-135.

Shahbandari, S., 2015. Traffic congestion costs more than Dh700, 000 per kilometre in Dubai. *Gulf News.*

Shaw, D., McMaster, R., Longo, C. and Özçaglar-Toulouse, N., 2017. Ethical qualities in consumption: Towards a theory of care. *Marketing Theory*, *17*(4), pp.415-433.

Sheeran, P., 2002. Intention—behavior relations: A conceptual and empirical review. *European review of social psychology*, *12*(1), pp.1-36.

Sheller, M., 2004. Automotive emotions: Feeling the car. *Theory, culture & society*, *21*(4-5), pp.221-242.

Shove, E., 2003. Changing Human Behaviour and Lifestyle: a Challenge for Sustainable Consumption?" [online]. Available at: https://pdfs.semanticscholar.org/43b5/5262e13068b3317fac7a3bf34e4d4ef10 481.pdf

Shove, E. 2010. Beyond the ABC: climate change policy and theories of social change. *Environment and Planning A. 42,* pp.1273-1285

Shove, E., Pantzar, M. and Watson, M., 2012. *The dynamics of social practice: Everyday life and how it changes*, Sage.

Simons, D., Clarys, P., De Bourdeaudhuij, I., de Geus, B., Vandelanotte, C. and Deforche, B., 2014. Why do young adults choose different transport modes? A focus group study. *Transport policy*, *36*, pp.151-159.

Smith, B. 2018. Generalizability in qualitative research: misunderstandings, opportunities and recommendations for the sport and exercise sciences, *Qualitative Research in Sport, Exercise and Health, 10 (1)*, pp.137-149.

Southerton, D. 2012. Habits, routines and temporalities of consumption: From individual behaviours to the reproduction of everyday practices. *Time & Society. 22 (3),* pp.335- 355.

Southerton, D., Chappells, H. and Van Vliet, B. eds., 2004. *Sustainable consumption: The implications of changing infrastructures of provision*, Edward Elgar Publishing.

Spaargaren, G., 2003. Sustainable consumption: a theoretical and environmental policy perspective. *Society and Natural Resources, 16(8),* pp.687-701.

Spaargaren, G., 2011. Theories of practices: Agency, technology, and culture: Exploring the relevance of practice theories for the governance of sustainable consumption practices in the new world-order. *Global Environmental Change, 21(3),* pp.813-822.

Steg, L., 2005. Car use: lust and must. Instrumental, symbolic and affective motives for car use. *Transportation Research A, 39,* pp.147–162.

Steg, L., Vlek, Ch., & Slotegraaf, G., 2001. Instrumental-reasoned and symbolic-affective motives for using a motor car. *Transportation Research Part F: Traffic Psychology and Behaviour, 4,* pp.151-169.

Thomas, G.O., Walker, I. and Musselwhite, C., 2014. Grounded Theory analysis of commuters discussing a workplace carbon-reduction target: Autonomy, satisfaction, and willingness to change behaviour in drivers, pedestrians, bicyclists, motorcyclists, and bus users. *Transportation research part F: traffic psychology and behaviour*, *26*, pp.72-81.

Thøgersen, J., 1995. Understanding of consumer behaviour as a prerequisite for environmental protection. *Journal of consumer policy*, *18*(4), pp.345-385.

Thøgersen, J., 2009. Promoting public transport as a subscription service: Effects of a free month travel card. *Transport Policy*, *16*(6), pp.335-343.

Tukker, A., 2004. Eight types of product–service system: eight ways to sustainability? Experiences from SusProNet. *Business strategy and the environment, 13(4),* pp.246-260.

Vanderbilt, T. 2010. *Dude, Where's Your Car? How not having a car became Hollywood shorthand for loser.* Slate. http:// www.slate.com/articles/life/transport/2010/ 07/dude_wheres_your_car.html .

Vasileou, K., Barnett, J., Thorpe, S. and Young, T. 2018. Characterising and justifying sample size sufficiency in interview based studies: systematic analysis of qualitative health research over a 15 year period, *BMC Medical Research Methodology, 18 (1),* pp.1-18.

Watson, M., 2012. How theories of practice can inform transition to a decarbonised transport system. *Journal of Transport Geography, 24,* pp.488-496.

Woods, R. and Masthoff, J., 2017. A comparison of car driving, public transport and cycling experiences in three European cities. *Transportation research part A: policy and practice, 103,* pp.211-222.

Wong, P. T. 1989. Personal meaning and successful aging. *Canadian Psychology / Psychologie canadienne, 30 (3),* pp.516- 525.

World Bank Data: UAE GDP. Available at: https://data.worldbank.org/country/united-arab-emirates(accessed June 2016)

Webster (2017) "UAE has best road quality but could do better on congestion" The National (February 22, 2017 https://www.thenational.ae/uae/transport/uae-has-best-road-quality-but-could-do-better-on-congestion-1.89870

Xenias, D., Whitmarsh, L., 2013. Dimensions and determinants of expert and public attitudes to sustainable transport policies and technologies. *Transport Research. Part A: Policy Practice 48,* pp.75–85.

UN. 2013. Planning and Design for Sustainable Urban Mobility: Global Report on Human Settlements 2013. United Nations, Abingdon (UK).

Urry, J., 2004. The 'system'of automobility. *Theory, Culture & Society*, *21*(4-5), pp.25-39.

Warde, A., 2016. *The practice of eating*. John Wiley & Sons.

**Table 1. Profile of Participants**

|  | Pseudonyms | Gender | Nationality | Marital Status | Mode of Transport* |
|---|---|---|---|---|---|
| 1 | Aadila | F | Emirati | Married | Car owner; non-user of public transport |
| 2 | Aaliyah | F | Emirati | Married with kids | Car owner; non-user of public transport |
| 3 | Aaqil | M | Emirati | Married with kids | Car owner; non-user of public transport |
| 4 | Kabir | M | Emirati | Married with kids | Car owner; non-user of public transport |
| 5 | Maisha | F | Emirati | Married with kids | Car owner; Regular arrangement with a private driver; non-user of public transport |
| 6 | Mersiha | F | Emirati | Married (new mum) | Car owner; non-user of public transport |
| 7 | Misha | F | Emirati | Married with kids | Car owner; non-user of public transport |
| 8 | Sabiha | F | Emirati | Married with kids | Car owner; non-user of public transport |
| 9 | Samaira | F | Emirati | Married | Car owner; non-user of public transport |
| 10 | Sameed | M | Emirati | Married with kids | Car owner; non-user of public transport |
| 11 | Beth | F | Egyptian | Single | No car; Regular arrangement with a private driver |
| 12 | Janet | F | Indian | Single | Car owner; non-user of public transport |

| 13 | Linda | F | Filipino | Single | No car; Public transport (taxi more often than bus) |
|----|-------|---|----------|--------|-----------------------------------------------------|
| 14 | Larry | M | Indian | Married with kids | Car owner; non-user of public transport |
| 15 | Mary | F | Filipino | Single | No car; User of Public transport (Bus, metro and taxi) |
| 16 | Michelle | F | USA | Married with kids | Car owner; non-user of public transport |
| 17 | Nicola | F | Irish | Married with kids | Car owner; car pool and taxi |
| 18 | Noreen | F | Canada | Married (empty nesters) | Shares car with husband; non-user of public transport |
| 19 | Samuel | M | Indian | Married with kids | Car owner; non-user of public transport; Wife uses public transport |
| 20 | Victor | M | USA | Single | Car owner; non-user of public transport |
| 21 | Yasmin | F | Jordanian | Married with kids | Car owner; non-user of public transport |

*Although the table suggests that most Emiratis are non-users of public transport, there were a few who have used public transport once or twice and draw from this experience to justify their reason for non-use as shown in the illustrative quotes.

**Table 2. Summary of the meaning elements of the daily commute practice and their relative materials and competencies**

| Meanings | Materials | Competencies | Illustrative Quotes |
|---|---|---|---|
| **Socio-cultural meaning**<br>• Social Stigma<br>• Social Class | The vehicles - the bus and metro<br><br>Supporting infrastructure - stations, bus shelters and stops<br><br>In-journey materials relative to experiences - seating, interaction with other passengers<br><br>The ticketing and other objects in commuting practice | Ability to navigate the public transport system | *"maybe I would use transportation because it's a small city, maybe it's safer…I think it's like too many people, different culture, it's really little bit scary to use. Especially I am a woman. Maybe it is little bit related to culture (Aaliya, Emirati, married with kids)*<br><br>*"certain social classes ride buses" and "people don't want to be included in those classes" (Victor, Expat)*<br><br>*"Just have a look to any public transport. The transportation here you can hardly find a lady. It's all the worker and just you know the low level of workers. It's scary just seeing that" (Misha, Emirati, married with kids)* |

| Meanings | Materials | Competencies | Illustrative Quotes |
|---|---|---|---|
| **Symbolic meaning**<br>• Freedom<br>• Independence | Personal vehicles like cars and the potential practices they allow<br><br>The reach of the transport system and how this relates to the demands of other practices | Driving License<br><br>Driving Skills<br><br>Awareness of traffic congestion | *"Yes, because traffic too much but my kids are small (so) I need to drive …. I need to make many things" (Maisha, Emirati, married with kids)*<br><br>*"He (husband) would drop me off in the morning, …, he would never come back, because 3pm sharp he leave the office, I am on a different scope of my work so I don't have a fixed time to leave the office, …, sometimes I stay until 7pm and he would get very (annoyed), I would ruin his day, so that's why avoiding that nagging from him, I use my own car" (Aadila, Emirati, married)* |
| **Personal meaning**<br>• Convenience<br>• Comfort<br>• Novelty and practicality | The materials and objects of transportation modes and their relation commuting experiences, i.e. avoiding the heat | Understanding of the effects of transportation on the environment | *I simply haven't (used) the metro, mostly because of the inconvenience of getting from the metro to places that I am* |

| Meanings | Materials | Competencies | Illustrative Quotes |
|---|---|---|---|
| | The density of the network infrastructure and how this relates to the time and resources of consumers – i.e. the location and number of stations, road infrastructure, proximity to desired location | Knowledge of public transportation schedules and routes<br><br>Driving skills and license | *going to (Nicola, Expat, married: empty nester).*<br><br>*"I don't have public transport very close, I have to go 2 kilometres down, then take metro, so it won't be efficient, so that's why I have to use my car". (Larry, Expat, married with kids)* |

**Figure 1**: 3–Element Social Practice Theory Framework  (Shove et al. 2012)

## Materials

(include things, technologies, tangible physical entities, and the stuff of which objects are made)

## Competences

(refers to as "understanding" and "rules" as well as knowledge, technique and embedded skills. )

## Meanings

(include meaning, ideas and aspirations that are relevant to practice)