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Aging, everyday active mobility and the challenge of the tourist city: an illustration from Barcelona

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Abstract

The transformative power of tourist mobilities on urban spaces and residents is well researched, but mostly in isolation from the local geographies of urban mobility and demographic change. This paper looks into the nexus of mobility transitions and population aging, and concurs that tourist mobilities condition the use of new active mobility infrastructures and create novel hindrances for residents. We focus on everyday active mobility of older residents, possibly the most exposed to such challenges, employing qualitative and mobile methods to gauge their bodily mobility experiences and perceptions in the tourist areas of Barcelona, Spain. First, we provide an account of the complexities of walking and cycling through the tourist city, and explore the relational nature of such experiences towards infrastructure, social environments, and lifecourses. Secondly, we show how active mobility and tourism mostly unfold in the same spaces and remain tangled at the margins of automobility. We conclude reflecting on the ambiguous effects of mobility transitions if active mobility space is to be negotiated with tourists. Accordingly, we propose alternative pathways that prioritize urban qualities for all city users, suggesting the pursuit of an age-friendly approach in academic debates and planning initiatives around (over)tourism and active mobility transitions.

Keywords: active mobility, cycling, walking aging, tourism, Barcelona, mobility transitions

1. Introduction

Cities are natural hubs of intense, assembled and unevenly affordable mobile activities across user and population groups, bringing about new 'mobile elites' that swiftly adapt to the transport options on offer when reforms of mobility systems are executed (Bauman, 1998; Sheller, 2020). The urban studies literature often mentions lower income and older populations as those who are more likely to face exclusions because of these transitions. In this context, the tourist dimension of the contemporary city plays out as an additional layer of mobilities - the movement of people, vehicles, goods and supplies -, in patterns that intersect, negotiate, and enmesh in urban space with residents' and workers' communities. Situating tourism and touristification amidst other urban change processes, an element that has gained traction in many cities is the transition towards sustainable mobility, commonly including traffic calming, pedestrianization, cycle lanes and greening initiatives, and accelerating in the wake of the COVID-19 pandemic (Nikitas et al., 2021). The space resulting from such reallocations and shifts, in turn, is enacted by new bodies and performances, including those of tourists.

In this paper we seek to make sense of the dual impact of contemporary urban transitions and touristification on the embodied mobility experiences of older residents. Geography and mobilities scholars have shed light on the multiple and ambivalent features of embodied mobilities, like the objects, infrastructures, discourses and connections that shape such experiences, the entanglements with

everyday life obligations and potentials, and the frictions to which they are subject (Edensor, 2007; Cresswell, 2010; Rabbiosi, 2021; Den Hoed et al., 2024). As Sheller observes, the fluid interplay of places, people, and technologies creates “complex spatialities and temporalities of contemporary tourism development, one of the key qualities of which is the performance of certain places as ‘escapes’ from the everyday and from the banality of (sub)urban sprawl” (2016, p. 17). The tourist performances of dwelling and navigating the city are assembled in spaces that indeed become less affordable or accessible to residents, through gentrification, population shifts, and urban renewal (López-Gay et al., 2021). While the production and consumption of infrastructure itself is nested in unequal structures of power (Layton & Latham, 2021), tourist mobilities in the city could thus be conceived as relational agency that constitutes, challenges and transforms its social geographies, making spaces more or less likely to be accessed by individuals with different capacities to be mobile.

Although the literatures about sustainable mobility transitions and (age-)inclusion in the face of urban change have advanced separately in recent years, a joint appraisal situating the exclusionary character of mobility transitions in a tourism context is lacking, particularly in relation to older adults. We follow from Tim Cresswell’s (2006) three-layered conceptualization of the centrality of mobility in human practices: as bodily activities that construct and connect spaces (as destinations), as embedded in thick sociotechnical and governance systems, and as social-emotional experiences of place intersecting with identity and belonging. In this way, we connect research on the shifting social geographies of the tourist city with the interdisciplinary work on urban population aging and its implications for urban living and mobility (Buffel & Phillipson, 2019). This work advances the potential of the Age-Friendly City concept to connect with a myriad of policy domains that support the development of urban environments providing economic, personal, physical and social resources to age well (Menezes et al., 2023; Van Hoof et al., 2021).

To examine the combined unfolding of mobility transitions and touristification in urban communities, we take an embodied approach to the analysis of cycling performances of people of older ages. We thus touch upon the frictions around cycling practices in tourist areas, but also build a case for the promotion of active mobility in such a way that it leads to healthy, inclusive and sustainable mobility access in a time of urban population aging. The central questions we aim to unravel are thus 1) whether and in which ways tourist mobilities act as an additional barrier to the promotion of inclusive active mobility; and 2) how urban spaces shape and pressurize active mobility routines and affordances of older residents.

Our empirical work to address these questions is based on the case of Barcelona, a quintessentially tourist city in which the effects of increasing pressure on local communities have been widely outlined by the literature (e.g. Russo & Scarnato, 2018; Cocola-Gant & Lopez-Gay, 2020; Morales-Pérez et al., 2022) and in recent public and policy debates. Part of the controversy is rooted in the perception of an overt occupation of mobility and transport infrastructure by tourist crowds and vehicles supporting the tourist functions of the city (e.g. Brandajs and Russo, 2019; Domènech et al., 2023). In this context, residents variously characterized as ‘less motile’ and depending on proximate mobility routines for their sustenance are regarded as a population at risk of mobility exclusion (Nikolaeva et al., 2019). Neighborhood and activist organizations actively voice their discontent in public fora, challenging the hegemonic policy that has driven the construction of a ‘city for tourists’ despite the remarkable recognitions gained by Barcelona as a leader in ‘smart’ urbanism and greening mobility (López Palomeque, 2015; Anguelovski et al., 2023).

Recent examples of new mobile performances in Barcelona result from the rapid introduction of micromobility vehicles – available to visitors as dockless or rental bikes, e-scooters and mopeds – that sparked mediatic attention about occupation of cycle lanes, pavement parking, and traffic infractions (Yúfera, 2024). Other forms of pressure to the spaces for active mobility have emerged incrementally, such as walking and cycling tours and the overt privatization of public space to host events. The City Hall has taken action against the most controversial questions, for instance prohibiting bicycle and e-scooter use in some streets of the Old Town and outlawing bicycle taxis altogether, but the general trend is that these inconveniences are not only on the rise but facilitated by tourism promotion (Burgen, 2024; Calvo, 2024; Sust, 2022). Hence, while cities like Barcelona attempt to transition away from motorized traffic and tame the pressure on already overcrowded mobility infrastructures, the newly won spaces for

active mobility may face precarity of access by populations at risk of mobility exclusion and selection as to who participates in these performances (Sheller, 2018; 2020).

As many other large cities in Europe, the demographics of Barcelona indicate gradual population aging in the last decades, exceeding the inflow of younger lifestyle and labor migrants. In the core tourist neighborhoods, the combined effect of population substitution and immigration is globally skewed towards rejuvenation, as noted by López-Gay et al. (2021) in their analysis of tourism-driven gentrification of the Gothic Quarter. Thus, while aging spatially concentrates outside of the core tourist areas, older people are increasingly challenged to maintain residents in the city center and face a daily mobility structure of 'commuting' to the center to run daily errands or maintain social relations in an increasingly 'touristified' environment (Ajuntament de Barcelona, 2018; Sánchez-Ledesma et al., 2020).

This spatial-demographic context, combined with the city's provision of active mobility infrastructure but also welcoming a relentlessly growing number of tourist bodies, makes Barcelona an ideal case to study the effects of tourism-related challenges on resident populations whose physical mobility may become precarious. To do that, we introduce and connect tourism-related challenges and inclusive active mobility, positing the Age-friendly City framework as a core pillar (Section 2). In Section 3, we develop our methodological framework and the empirical rationale of this study. In turn, Section 4 reports on the findings of a mixed-method fieldwork in our case study of Barcelona. Section 5 concludes with a discussion of insights from this approach and interprets our argument with relevance for policy and future research.

2. Conceptual background: from mobility transitions to age exclusions in the tourist city

Active mobility transitions and age-inclusion

There is no doubt that active mobility delivers collective social and environmental gains from reductions in traffic congestion, pollution, energy consumption, noise, and improves public health and urban livability, especially when it replaces car journeys. As shown in a longitudinal analysis of mode shifts around European cities, active mobility is essential to urban futures: "investing in and promoting active travel should be a cornerstone of sustainability strategies, policies and planning (...) to meet our very challenging sustainable development goals that are unlikely to be met without significant mode shift to sustainable transport" (Brand et al., 2021, p. 15). However, the precarious access to public space for cyclists, for instance, reflects the simultaneous bodily safety issues and the lacking legal rights and societal recognition as long as the dominance of the automobility system persists (Egan & Philbin, 2021; Urry, 2004). For the most of a century, this system has penetrated and hegemonized the three elements of mobility experiences identified by Cresswell (2010), forcing all citizens to deal with the constraints it imposes to the spaces and temporalities of everyday urban life (Dowling & Simpson, 2013).

Within this context of car-centric cultures and infrastructures, cities have begun to support urban cycling and walking, usually through the creation of spaces and lanes to form separation from vehicles that are large, fast, and polluting. Hence, Spinney (2022) situates current cycling interventions within a wider mobility politics (Cresswell, 2010; Sheller, 2018), arguing that new cycling practices, systems, and materialities primarily exist to "fix" the economic problems (congestion, pollution, health expenditure) that result from the long-term automobilization of cities. This posture, in turn, goes at the expense of the plurality of cycling's practices, meanings, and indeed its feasibility for people's different bodies and ages (Spinney, 2022, p. 209). Similarly, cycling interventions oriented at areas of economic productivity may render cyclists in less attractive areas 'invisible' and can even result in an unequal distribution of its economic and health benefits through 'bicycle gentrification' (Golub et al., 2016). Indeed, many authors argue that cycling mobility is less attainable for older people (Garrard et al, 2021; Van Cauwenberg et al., 2018). This is particularly unfortunate given the higher benefits that cycling could provide for this population cohort, improving physical and cognitive functions and preventing poor health (Götschi et al., 2016). The imbalanced uptake is reflected in many low-cycling places, where around three-quarters of the cycling population consist of men of a limited age range (Aldred et al., 2016).

Cycling research has not only begun to forge a critique about cycling promotion's ties to urban economic development plans, but has also opened new directions about cycling types and cultures, and about performances and new geographies of previously ignored or invisible cycling practices. For instance, these practices may suppose a less utilitarian position of mobility (Castañeda, 2020; Soliz, 2021), reducing the overall presence of traffic in cities (Nello-Deakin, 2020), or other propositions towards a velomobility system capable of replacing, rather than adding to, mobility revolving around the private car. This leads Castañeda (2020) to conclude that a city cannot reach its full potential when the mobility of some citizens is impeding the free movement of others under the influence of automobility (c.f. Sheller, 2018). Cycling interventions that do not take account of social equity principles may thus exclude the use of those who need higher infrastructural safety standards and those who tend to undertake less linear journeys, including women, children, and older people (Garrard et al, 2021; Ravensbergen et al., 2022).

Challenges for age-friendliness in tourist cities

Following from the previous section, the challenges for an age-friendly approach to active mobility can be situated within two concurring forcefields. On the one hand, the growth of tourism features a distinct re-orientation of the city's infrastructure and economy – what came to be called touristification (c.f. Freytag & Bauder, 2018). On the other, the regeneration of built and social environments, through initiatives of street pacification and cycling promotion. Both dimensions of change have raised concerns for social equity, or for the pressure – physical and emotional – they impose on older and less mobile or adaptive citizens.

Indeed, Lopez-Gay et al. (2020) suggest that older people are one of the key groups involved in tourism-induced population change and the related urban transformations. On one hand, some seek to migrate out of tourist areas ('flee') while, on the other, those who stay may suffer marginalization and isolation ('freeze'). Further tourism scholarship highlights the physical and mental discomfort of having to negotiate daily routines with visitor crowds or coping with a waning life-supporting infrastructure in the proximity (Quinn, 2007; Sánchez-Ledesma et al., 2020). Touristification may thus reduce older people mobility opportunities by removing structural elements from the streetscape, including social infrastructures and resting places, and by endangering mobile activity itself by adding the need to negotiate other bodies while on the move. Besides the negative external effects of tourism-related mobilities, social gerontology studies also point out that social infrastructures such as neighborhood ties, informal support and care, and intergenerational living are precisely what sustains older people's autonomy, local attachment, and mental wellbeing (Lager et al., 2013; Palladino, 2019). As to the second forcefield of change, even regeneration initiatives that represent positive shifts towards greener and healthier cities may interweave with increased inhibitions and barriers for the use of public space, including access issues or rising housing affordability for disadvantaged urban residents (Immergluck & Balan, 2018; Oscilowicz et al., 2022).

As the prospect of a breakthrough transition towards more sustainable tourist mobilities since the COVID-19 pandemic has not materialized (Gössling & Schweiggart, 2022), urban mobilities remain affected by concurrent tourism growth and ensuing spatial reconfigurations. This is where we connect the literature on touristification to that on active mobility promotion: the corresponding activation of the human body and its senses, helped by technologies such as the bicycle or electric assistance, intrinsically creates new bodily performances of space. In fact, active mobility's conceptualization of intrinsic values of health, meaning, personal growth, and interpersonal interaction (Prytherch, 2022; Stroope, 2021) mirrors the urban tourism experience's attention to performing meaningful mobile activities and exposure to others (Armağan & Temel, 2022).

Our suggestion of an age-friendly approach to mobility in tourist cities follows the emerging scholarship on relationships between mobility and aging populations, which came to fruition after the creation of the World Health Organization's Age-Friendly City (AFC) initiative (Curl & Musselwhite, 2018; Murray, 2015; Van Hoof et al., 2021). Aside from making sectoral impacts to age-inclusion, the AFC seeks to address the limited role of older people in urban decision-making processes (Menezes et al., 2023). We thus extend the integrative capacities of the AFC to the case of the tourist city, while intending

to capture the age-related frictions of tourism-oriented and active mobility transitions as relational and territorial aspects that shape current (in)equalities of aging in place (Yarker et al., 2024).

In the next section, we therefore propose a methodological approach that advances older people's active mobility realities, as they are lived and performed in the tourist city. Using age-friendliness as transversal approach to city mobilities, and situating tourism as an interfering layer, we intend to explore the impairment to everyday active mobilities under the influence of the motorized mobility system and pervasive tourism pressure. This leads us to present an account of urban mobility futures that exert less space, less acceleration, and make sustainable behaviors more durable over time (Bruno & Nikolaeva, 2020; Freudendal-Pedersen & Kesselring, 2021).

Comentado [AR.1]: Doesn't read well. Simplify. We don't 'advance' that with our method... we give it more focus

3. Methodology

Research design

Following the described accumulation of new urban mobility-related frictions, we sought to answer the research questions: whether and in which ways do tourist mobilities act as an additional barrier to the promotion of inclusive active mobility? And how do tourism spaces shape and pressurize active mobility routines and affordances of older residents? To this end, we created a mixed-method case study on the active mobilities of people of 60 years and older residing in highly frequented tourist areas. Using biographical interviews and mobile methods, we aimed to capture the narrated and embodied experiences enacted in active mobility spaces, as everyday cyclists and as pedestrians in their local area; and to situate these experiences in the spatial and social contexts of people's daily mobility patterns, usually crafted over time based on life transitions, deliberated behaviors, and external changes (Chatterjee et al., 2013). With a usual duration of 60 minutes, interviews inquired about the uptake of different travel modes over the lifecourse; opportunities and hindrances associated with walking and cycling in the past, present, and (foreseen) future; and the extent to which the spatial context of the tourist city affected their active mobility uptake and experience. Initially, this case study focused on older cyclists, though the interviews also consisted of walking experiences. Subsequently, the mobile method consisted of accompanied cycling journeys (ride-alongs) to engage with cycling's fleeting mobile sensations, specifically its flow, physical effort, interpersonal interactions, and decisions on-the-move (Spinney, 2011). A clip-on microphone on the participant and an action camera mounted on the handlebars of the researcher facilitated the audio- and video-recording of these ride-alongs. In this way, we collected visual data about the cycling environment, mobile rhythms and behaviors, and conversation transcripts to interpret how cycling appeals to bodily capacities and how micro-decisions on-the-move within the spaces of concern to this study (Jones et al., 2017).

The research team approached participants via a recruitment call circulated by local active travel-related organizations, mailing lists, social media campaigns, and ensuing chain-referral sampling. It called for people of all levels of cycling experience, from learners to lifelong riders, to include a range of actual and potential users of cycling infrastructures in the municipality of Barcelona aged over 60. Between April and September 2022, 21 people living in or habitually travelling through the tourist center responded to the call, resulting in a range of older ages (60-88), levels of cycling experience, near gender balance (46% female), and a spread of residential locations. The boundaries of the area with high tourism intensity were based on the city's tourism zoning plan and on spatial analyses of tourist mobilities by the municipality (Ajuntament de Barcelona, 2017; 2020) and are displayed in Figure 1. After completion of the interviews, we asked participants to keep online travel diaries and invited them to a ride-along on a frequent, habitual route of their choice. 12 participants took part; on two occasions with a travel companion, thus forming a dual ridealong (Ignasi with Eva and Vera with Noemi). Table 1 provides the details of the participants and the methods applied with each of them. All participated under informed consent, whereas we anonymized identifiable details in the analysis and their names pseudonymized in this paper in compliance with University ethics and data management provisions.

Table 1: Demographic details of the study's participants living in or riding through neighbourhoods with high tourism intensity (source: own elaboration)

Name	Sex	Age	Neighbourhood	Commute (if relevant)	Interview	Ride-along
Carles	M	72	St Antoni		X	X
Gerard	M	71	Central Eixample		X	
Llorenç	M	61	Central Eixample		X	X
Olga	F	67	St Antoni		X	X
Flor	F	60	Les Corts	El Poblenou	X	X
Héctor	M	62	La Bordeta	Gothic quarter	X	
Lluís	M	67	El Raval		X	X
Simón	M	64	El Born		X	X
Francesc	M	63	Central Eixample	Central Eixample	X	
Jordi	M	88	Central Eixample		X	
Noemi	F	75	El Raval		X	X
Gil	M	64	Central Eixample	Central Eixample	X	
Victor	M	61	Central Eixample	Central Eixample	X	
Sebastián	M	60	Central Eixample		X	X
Robert	M	65	Central Eixample		X	
Eva	F	67	El Born		X	X
Nàdia	F	65	Central Eixample		X	
Vera	F	78	Les Corts			X
Sara	F	60	St Antoni	Central Eixample	X	X
Marc	M	66	El Poblenou		X	
Ignasi	M	67	El Born			X
Total		$\mu = 66.8$			#19	#12

Data analysis

The analysis for this paper followed the thematic analysis steps outlined by Braun and Clarke (2006) to develop, group, test and refine codes and define (sub)themes. We read and coded the mentioned selection of interviews for meaningful comments about walking and cycling in tourist areas, as well as for interpersonal interactions and experiences with tourist mobilities. Then we selected the 12 ride-alongs sections that took place in areas and on axes with high tourism intensity, which we analyzed for the following occurrences: type of cycling facilities; pedestrian interaction; vehicle interaction; built environment interaction; adaptive behavior; bodily mobilization. This flexible categorization of video observations allowed for their inclusion in the thematic analysis, pairing them with the transcriptions of the rides and with the previously identified interview codes. We processed and analyzed the video observations, interviews and ride-along transcripts through the ATLAS.ti software. We organized and collated the codes from the interviews and ride-alongs through closed coding so that they related to the central questions of this article: expressions of city and neighborhood change, mobility routines and experiences, descriptions of the mobility environment encountered when cycling, and effects of tourist mobilities. In a more inductive way, we assembled the expressions of wellbeing and recreation as 'own leisure', following participants' frequent expressions of visiting the city's tourist attractions or their combination of habitual, functional rides with sightseeing or other social or leisurely undertakings. The overarching themes resulting from this analysis are illustrated in Section 4: the environments used for cycling in Barcelona's central tourist areas; participants' interactions with tourist collectives and with automobility infrastructures; and the performance of leisure-oriented activities while cycling. The coding and observational descriptions were done in English to facilitate the write-up of the analysis, whereas the interactions with participants took place in Spanish and Catalan.

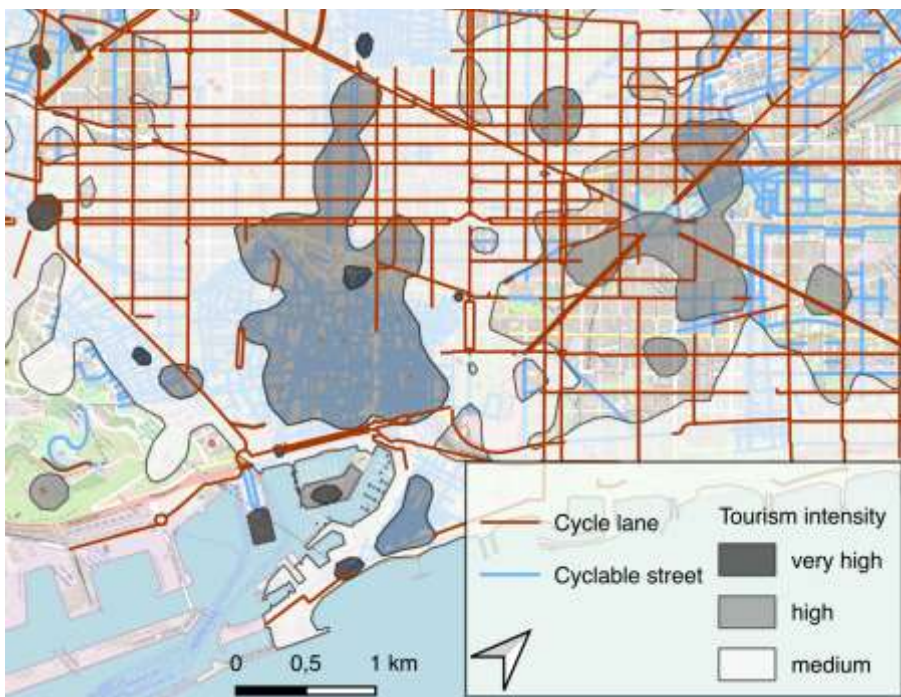
Study context: tourist spatialities in the aspiring cycling city of Barcelona

Intensively developed tourist cities – or overtouristed urban destinations (Milano et al., 2019) – like Barcelona offer a good case for analyzing the complexity of sustainability transitions among the material and economic force field of tourist mobilities. Their production of space is enacted at different scales: from the wider scale of visitor attraction – from the sheer number of 'tourist users' enabled by ever-widening access gateways and expanding hospitality infrastructure or 'moorings' (Milano et al., 2023)

–, to power relations unfolding in negotiations for space at the microscale of neighborhoods, squares or sidewalks (Arias-Sans & Russo, 2016; Brandajs & Russo, 2019). All of that is subject to a selective politicization, reducing tourism planning and management to an instrumental and technical domain favoring economic growth and making Barcelona a socially exclusionary tourist city (Russo & Scarnato, 2018). However, the exclusions resulting from bodily negotiations of (tourist) space has received relatively little attention, with exceptions found in cruise tourists' impacts on public space (Brandajs & Russo, 2019) or nocturnal transits in popular neighborhoods (Nofre et al., 2018).

Next to its intense spatial concentrations of tourist mobilities, the Catalan capital is also the scene of several interventions in its infrastructural landscape. Current mobility policies aim to transform the city's modal split to a combined 80% of walking, cycling and public transport, especially driven by high air pollution indicators and climate action (Ajuntament de Barcelona, 2020). Traditionally, the city has a distinctively high share of pedestrian mobility (34% in 2018) and has a dense network of public and commercial amenities, which in many aspects resembles that of a 15-minute city (Ferrer-Ortiz et al., 2022). Current interventions that support active mobility uptake occur in the form of street pacification and tactical urbanism (Superblocks), extension of the cycle network, discouraging car use and lowering speeds, and excluding the most polluting vehicles using a low-emission zone. Yet, an estimated 65% of public space is still dedicated to the storage and circulation of private motorized vehicles, while they only represent 26% of the city's modal share (PASTA, 2017).

Figure 1: cycling infrastructure (2024 data) and tourism intensity levels (2019) in Barcelona's center. Source: elaboration based on Open Data BCN (<https://opendata-ajuntament.barcelona.cat>)



In terms of cycling space, the city has nearly 300 kilometers of cycling infrastructure (126 kilometers in 2016), aiming to grow cycling's (and e-scooters') modal share to 5% in 2024 (2,3% in 2018). The current uptake largely varies between neighborhoods and demographic groups, as for instance only 0.6% of

people aged over 65 indicate to cycle for their principal activities (Ajuntament de Barcelona, 2022). Importantly, the city estimates that one out of three residents will be older than 65 by 2030 (21% in 2018), 8.3% of which will be over 80 (Torrens et al., 2022), which means that by present standards large parts of the population may have less access to cycling-related interventions. Although most parts of the city's tourist core displayed a relative reduction of people aged over 65 during the 2010s, this is more than compensated by the increased aging rates in almost all other parts of the city. The city attempts to address these trends by recognizing the heterogeneous needs of older populations, advancing intergenerationality and older adults' right to the city, and stimulate active aging through social programs and strengthening the fabric of (home) care services (Ajuntament de Barcelona, 2018). The present municipal strategy, however, pays limited attention to older adults' everyday mobility needs and its adjustment to the city's ambitions in the mobility domain.

In its mobility strategy, Barcelona's City Council calculated that tourists make 11-14% of the city's internal trips, depending on the season. Most tourist trips (78%) are by foot or metro, which makes their modal split a rather sustainable one. Cycling (0.6%) and other micro-mobility options such as e-scooters, other two-wheelers and rickshaws (0.8%) make for a small proportion of tourists' internal trips (Ajuntament de Barcelona, 2020). Figure 1 shows how the city's tourism intensity coincides with the types of cycling infrastructure in Barcelona: dedicated cycle lanes and 'cyclable streets' shared with other vehicles and pedestrians. In this context, we question the combined impacts of tourist mobilities and nascent cycling possibilities on the mobility experience of its older residents.

4. Findings

Based on our analysis and the concepts identified at the intersection between active mobility, tourism, and age-friendliness, we now describe the features of the cycling spaces encountered in Barcelona's tourist center. Then we dedicate two sub-sections to analyzing the study participants' most prominent occurrences in these spaces: expressions of tourism-related city and neighborhood change and interactions with the city's automobility spaces. Then, the last sub-section provides a brief insight into the touristic elements found in participants' everyday mobilities themselves, an inductive theme that became evident as functional and leisure-oriented activities mix within their cycling patterns.

The use of the cycling infrastructures in Barcelona's central areas

The city's mobility documents and web tools show a relatively integrated cycling network that covers most of the streets in the city's central areas. It uses a threefold typology of cycle lanes, 30 km/h zones, and cyclable streets (Ajuntament de Barcelona, 2020; 2023). The observational analysis of the spaces in which participants cycle, however, shows a much more diverse picture. The street grid of the old town is narrow, with various maximum speeds between 10 and 30 km/h. The main squares that surround the old town (the Catalunya, Universitat, and Urquinaona squares), often fed by the city-wide traffic axes, neither have cycling infrastructure that connects them to the old town. In and around the old town, participants occasionally use pacified spaces, featuring Superblocks and 'single platform' spaces intended as low-traffic areas shared with pedestrians and motorized transport. In turn, the touristic core of the Eixample district is formed by long, straight, and wide avenues whose perpendicular structure forms a rectangle street grid with cycle lanes on most streets in southwest-northeast direction and on about half of its northwest-southeast streets (see also Den Hoed, 2024)

The observation of participants' cycle routes shows a similarly large variation of cycle spaces. They ride interchangeably on one- or bidirectional cycle lanes, varying in width on different segments, either on the left or right side of the car lanes, and unprotected at intersections. Where dedicated lanes are absent, they cycle on main roads that vary in width between one and four lanes. Maximum speeds on the road space they use vary between 10 and 50 km/h. Some participants also ride on signaled shared-use pavements, traffic-free promenades, and single platform streets. In addition, they use pedestrian and shared crossings to traverse side streets. Looking at other tourist spaces, not part of the central core, it

is striking that continuous cycling facilities are absent along the coastline and on the Montjuïc hill, as observed in the ride-alongs from the center to these places.

The analyzed segments of dedicated cycling spaces show large variation in terms of design features, signalization, connectivity, separation from motorized traffic, and separation from pedestrians. Evidently, these sets of routes sharply contrast the impression of an integrated cycling network with a threefold typology of cycle lanes. Furthermore, they contain a large variation of users and vehicles, including different bike types, but also people riding e-scooters, skates, small delivery vehicles, bike taxis, runners and wheelchair users, and – illegitimately – users of cars and vans to (temporarily) park their vehicles. Noemi (75), living in the old town, summarizes this situation as follows:

“I would like there to be more vigilance towards the e-scooters and people who jump traffic lights, (...) and then there are the bike messengers. They’re going to give you a hard time, they overtake you, they pass you and you always have to check. I try to do it well from my side and be a good citizen.”

Interactions with tourists

The thematic analysis of the interviews and ride-along videos resulted in two distinct sub- themes about interactions with tourist collectives. In this section, we focus on interactions when either walking or cycling – thus involving the mobile activities of both participants and tourists – and on the expressed or observed measures taken by participants.

Regarding the first sub-theme, the perceptions about tourists’ interference with walking mobility are mixed. Positive mentions usually express that the presence of people in general is an incentive to come to a site, making for a lively space. Some also mention the lack of tourists during the pandemic, giving the city center an eerie, sometimes unsafe outlook. Conversely, the largest hindrance to walking mobility is overcrowding and massification of pavements, squares and central streets. This impedes passage and makes it difficult to navigate walking spaces in a straight line by foot. Specific walking difficulties are identified in the Portal de l’Àngel shopping street, Las Ramblas, Via Laietana, and Passeig de Gràcia. A distinct set of interactions-when-walking is found at the inter-personal level. Many participants mention the fleeting interactions of hearing different languages or explain that they used to assist tourists with wayfinding. With the rise of mobile navigation apps the latter is no longer necessary, leading some participants to lament the disappearing opportunity for interaction. Llorenç (61), living in central Eixample, notices he no longer acts as an occasional tourist guide, but is instead a recipient of anonymous visitor flows: “There is very little interaction with the tourist. The tourist is autonomous, goes with his mobile phone, looks on Maps, looks for the hotel, and looks for a restaurant with TripAdvisor”.

When cycling, participants recurrently mention the overcrowding of shared spaces by pedestrians (the most numerous mention in this category), the coincidence with tourists on (rental) bikes or e-scooters on cycle lanes, and their distracted behaviors or violations of traffic rules when riding in groups. There are also a few mentions of positive effects of tourism on cycling mobility, such as the refurbishment (traffic calming) of central urban spaces. As with walking, however, the main tourist-related impediment to cycling mobility is obstruction, or, in this case, encroachment on the cycle lane. This is illustrated in an extract of the ride-along with Sebastián (60, Central Eixample), who confronts two tourists on bicycles who are blocking the intersection of two cycle lanes. Riding on the wide lane of Aragó Street, two cyclists and an e-scooter rider are waiting in upward direction in the middle of the lane that crosses the Girona Street. As we approach, the e-scooter moves back but the two young men on rental bikes stay there, in the middle of our lane. In passing, Sebastián asks where they are from, and the two young men shout at him and identify themselves as visitors from the Netherlands (Figure 2).

Figure 2: (i) Sebastián (male, 60) cycles on an unprotected junction and encounters two tourists on rental bikes as they wait beyond the advanced stopping line. (ii) Eva (female, 67) maneuvers her way around pedestrians, terraces and waiters while riding through the shared-use streets of El Born. Source: elaboration of own material ©



As second sub-theme, we identify the expressed and observed responses of participants to tourists' mobile activities. Participants frequently share their views about the different types of tourist transport, among which bicycles, public transport and cruises. Physical crowding seems to be the biggest nuisance, as some participants ask "excuse me" when crossing concentrated tourist zones or accessing the entrance of the metro stations. Most label the crowds they encounter with collective words such as 'procession', 'show', 'parades', 'herds', 'rivers', and mention the mismatch with their own mobility needs:

"When I worked in [old town], I couldn't ride my bike when leaving work, I had to push it down the street. There were so many people that I couldn't [cycle]. This happened with cruise ship tourists and during the big sales (...), suddenly you find three or four groups of 30, 40 or 50 people, and they are impassable" (Héctor, 62; about commuting into the Gothic Quarter).

"You have to get around them every time, they are quite annoying. Because they take up all the space, they stand there at the traffic lights (...). But well, I suppose that if I also go to another country and I don't know how things go, I'd stand in the middle of the bike lane. I don't blame them, but it's a problem." (Olga, 67, Sant Antoni)

Lluís (67), living in the old town, indicates a response of deliberated dissociation from the tourist presence on the street: "I ignore them. Our lives are separate, I'm not interested in that". Flor (60), living

less centrally but habitually cycling through the city center, in turn, recounts a more pleasant experience attempting to educate visitors to the city while cycling:

“The other day I was going up Marina Street, I saw a young couple who were riding on the pavement, and I was in the bike lane next to them. They were dodging people and slaloming. At some point, I was waiting at the traffic light, and I told them: ‘Here is a bike lane’. They hadn't seen it; they were so overwhelmed that they hadn't seen it. That's when I pointed to the bike lane, and they got on it to go up to the Sagrada Família.”

Participants further respond to tourism-related hindrances by avoiding areas or rescheduling trips. Specific responses include changing routes, taking shortcuts, evading places at set times, getting off the bike, and ringing the bell. In turn, the cycle lane crowding seems particularly related to the diversification of the user and vehicle types provoked by tourists' mobilities. These types include Segways, tricycles, bike taxis, group bike or e-scooter rides, and electric skateboards. Particular difficulties are encountered in the Gothic Quarter, Passeig de Gràcia, and around the Sagrada Família, where groups of tourists wait on the cycle lane or step down from the pavement. This leads to some participants to question the capacity of cycle lanes, particularly on routes taken by tourists and between places with high visitor numbers, and the displacement of tourist-related crowding to cycling spaces. In addition, residents may feel pushed out of these spaces following safety concerns. Olga recounts: “Since a while I'm not going through the old town, the last time I fell due to some tourists that hit me. I rode on the cycle lane a tourist crossed, hit my back wheel from the side and let me fall. I fell and hit my knee. They just passed and kept pedaling.”

Besides avoidance, complaint and danger, participants mention spatial, temporal and bodily forms of mobile negotiation in touristic areas. By avoiding certain times and spaces, or not cycling at all, they wait for their mobility to become invisible, going “when no one is there” (Lluís, 67). Specific examples of spatial and temporal negotiations center on the old town and the coastal zone and include the avoidance of vast pedestrianized zones and cycling through narrow alleyways using detailed knowledge of old town “labyrinth” (Simón, 64). The observations show participants' physical negotiations as they cycle, they swerve around (groups of) people, aptly measuring their different speeds and directions of walking. This mixing ability seems a unique feature of cycling which people employ to ‘fit in’ pedestrian flows in shared spaces.

Yet, the ability to do so is also an adopted physical skill, involving a slow and steady cycling style, constant alertness, and pre-emptive positioning to negotiate unexpected moves of the many pedestrians. Some dismount their bicycle and push their bikes on certain parts of the route, indeed turning into pedestrians themselves. Various participants express how cycling in co-existence with tourist crowds is a matter of ‘knowing what to do’, following accumulated experiences. Victor (61, Central Eixample) explains: “the traffic-calmed zones, for example, take a lot of effort. Sometimes you'd find a group of tourists who all ride in group. Sure, it's not something I can't live with. You must put up with it and that's it”. Concurrently, he indicates how he limits his route choices and pushes his cycling distances: “There are too many people in the Eixample, basically. If you go to the coast, it's already more porous, there are not so many people. (...) There, you can choose the route that is comfortable. But in the Eixample, if you use the bike lanes to get to the places, you have to keep setting the pace”. Specifically on using traffic-calmed streets, Lluís (67, El Raval) comments on the cognitive effort it takes to ride to Las Ramblas, which is partly restricted from through-traffic:

“This is a street for pedestrians [10 km/h zone, ed.]. In fact, there are a lot of people stepping down from the sidewalk. (...) Las Ramblas is something else. It's a 30 [km/h] street. Here you can't go very fast either. You can get a scare and you have to watch out. You have to be very attentive to everything.”

Interactions with automobility infrastructures

Besides interactions with tourists themselves, a distinct form of interactions while on the move is found in relation to the city center's vehicle density and general mobility environment. As shown earlier, many streets in Barcelona's tourist core lack uninterrupted connections for cycling. These challenges are reflected in the ride-alongs, in which many participants visibly mobilize their body (extra movements, cycling in-between busy car traffic) where direct routes on dedicated cycling spaces are absent, especially in and around the old town. Here, they anticipate driver and design flaws (e.g. lanes ending)

and seem to rely on longstanding experience of cycling among car traffic. The observational analysis highlights the persisting hegemony of motorized transport, perceptible through the noise, the long waiting times at traffic lights, but also through cars, vans, and motorcycles parked on pavements or stopping at crossings. In one instance, a delivery van driver makes a dangerous turn, reversing into the path of Eva (67, El Born). While examples of dangerous driver maneuvers are incidental in the rides, dismounting and circumventing frequently came up in the interviews as safety concern in and around the old town (also exemplified in Figure 2, *image ii*). Interestingly, some also note their exposure to touristic vehicles such as the hop-on hop-off buses. During a joined ride, Noemi (75, El Raval) shouts to her friend Vera [78, Les Corts]: “Go! Let’s move to the pavement! We must avoid riding past the tourist buses.”

Importantly, interactions with tourists and motorized-traffic infrastructures coincide in most of the study area. The most observed occurrences of congestion with pedestrians happen at traffic lights in the old town, which do not have crossing facilities for cyclists, have long waiting times, or are not wide enough to accommodate the pedestrian flow. Here, pedestrians and cyclists share space because of the discontinuity of the cycle network: cyclists choose between joining motorized traffic on the road or pedestrian traffic (often tourists) on pavements, promenades, or pedestrian crossings. The other way around, the limited walking space (e.g. narrow pavements) leads pedestrians to walk in cycling spaces. For example, cycle lanes in the Barceloneta area are painted on existing pedestrian spaces, as part of the raised platform. While on other wide avenues (e.g. in the Eixample area) they are placed alongside the car lanes, the observed lack of consistency means that cyclists have to slalom around people walking on the cycle lane, precisely in spaces with high tourist concentrations.

Further infrastructural imperfections, including cycle lanes ending in pedestrianized areas (e.g. in Barceloneta, on the Parallel Avenue, Ronda Sant Pau) and lacking connections add further inconveniences and increase exposure to, interchangeably, car traffic volumes and pedestrian flows around the tourist core. At the same time, some see the traffic-calmed streets of, for instance, the Gothic Quarter as cycling ‘refuge’ that avoids the fast, busy and noisy main roads. As Marc (67, El Poblenou) explains:

“I feel good about cycling in the center, in the old town. Because the bike is something that fits its proportions. I mean, if you see a bicycle on the [large, wide] Diagonal Avenue, it’s just a dot, almost nondescript. If you put a bicycle in the Ferran Street or the Llibreteria Street [both in the Gothic Quarter], the relation to the size and the width of the street is more proportionate.”

The everyday urban cyclist as tourism performer

A last recurrent theme emerges from a striking majority of participants who mix leisure activities into everyday journeys or display spatial patterns similar to that of tourists. Importantly, their cycling strings together functional and recreational trip motives, combining getting from A to B in the city with leisurely rides or detours. With that, a clear distinction emerges between, firstly, leisure-oriented rides that in most cases are practiced *outside* the city center or lead to destinations outside the city, such as the coastal towns, valleys and hills surrounding Barcelona. While these hardly coincide with tourist traffic or activities common to foreign tourists, participants expressly seek to escape overcrowded spaces and everyday routines to enjoy natural and rural areas. Without being prompted to talk about non-urban cycling, many interviewees mention rides or detours to areas within 10 kilometers from most parts of the city (e.g. the neighboring riverside parks or the Collserola hill range). In other occasions, they make premeditated rides in which trip motivations are usually exploration, wellbeing and collective effort. As Flor (60) narrates on the first two:

The other day I cycled to the Besòs River Park where I had never been before. A friend from [social network] told me how to get there. I did something similar to discover the Llobregat Delta, which they said was very nice for cycling. As I did not have much idea of how to get there, I wrote a tweet and said ‘can someone recommend me how to get there?’. And I got answers from a lot of people with routes that I have put in Wikiloc [route app] to see which one I can use best to get out of the city. (...) I did that like three times. With [female] friends who asked me, though I also like to go on my own and stop where I want, take a picture where I want.

Secondly, functional, recreational and social trip motivations frequently integrate with other activities *within* the city. During the ride-alongs, participants frequently stop, wave, or point at buildings, people and viewpoints, seemingly open to fleeting social and sensory experiences of city life. More incidentally, participants also explain changes to the city and cycling anecdotes, stop at tourist attractions, and talk about scenic route options and taking friends and family around the city by bicycle. Sebastián (60) even dismounts during the ride-along to walk through an indoor market in Central Eixample and greets the food merchants. From here, he makes his way to a bakery in the Gràcia neighborhood. Upon entering Gràcia, he comments:

The good thing about cycling is that you see the city in a different way, you can enjoy it in a different way. And that's interesting, because as we are so used to riding at full speed, you don't see things anymore. I always like to look. Well, look, here is a roof patio with a parasol [points up]. I'm always looking at the rooftops. They are curious places.

5. Discussion: the ambiguous effects of urban mobility transitions in tourist spaces

This paper examined in which ways tourist mobilities are an additional barrier to the making of inclusive mobility transitions and studied how urban spaces shape and pressurize active mobility routines and affordances of older residents. Our results highlight the fine-grained negotiations and scheduling strategies that older residents employ traversing urban tourist spaces. Both spatially and temporally, their mobilities face and pertain to a competition in which the aging body mediates the ability and experience of taking part. Participants in this study, adults over 60 with different levels of cycling experience, displayed a 'compulsory conviviality' with urban tourism as mobile agents in tourist areas, either resigning to the fact that tourism-related hindrances are part of life or remaining invisible by not accessing commercial, social or other outdoor activities at certain times and zones. This account of 'not being there', reinforced by the reliance on local knowledge and physical capacities to negotiate hindrances, challenges the possibility to sustain mobile behavior in line with the present active mobility transitions (Bruno & Nikolaeva, 2020; Freudendal-Pedersen & Kesselring, 2021).

Namely, active mobility users encounter tourists and notice how spaces such as pedestrianized areas and cycle lanes turn into tourist infrastructure. This happens in the form of physical overcrowding, walking on the cycle lane, and introducing new cycling behaviors by visitors. In this way, active mobility infrastructures themselves become tourist attractions or passage channels, which trigger new tourism pressures on public spaces, repel 'ordinary' uses such as older residents' everyday mobilities, and prioritize the mobility of the gazing elites (Bauman, 1998). Second, older active mobility users face the double hindrance of bodily negotiations with concurring tourist mobilities in the cyclable space, and of the transitioning physical infrastructure. They are forced to negotiate and contest new and existing tourist channels that are bordered by a transport design dedicated to motorized vehicles. These borders, for example, are enacted into long waiting times and limited space at pedestrian crossings. The absence of cycle spaces on the main squares and traffic axes surrounding the old town coerces cyclists into traversing the city's fractions generated by the automobility system (Urry, 2004), leading to intensified interactions and awkward sharing with pedestrians.

Based on these findings, we distil three contributions for academic scholarship at nexus of active mobility transitions, aging, and urban tourism geographies. Firstly, we reveal mobility experiences' relational nature to changing urban infrastructures, people's social and functional mobility needs, and their mobile capabilities. The frictions that are attributed to the negotiations of active mobility in a touristified space are revealed as embodied effects of a politics of mobility which counters the notion of cities as "perpetual motion machines" and exposes the unequal distributions of urban rhythms, routes, and experiences in space and between people (Cresswell, 2010, p. 26). This exposes how urban tourism conditions an aspiring cycling city through the annexation of (new) infrastructures and the occupation of spaces precisely designed to reduce frictions and uneven competitions between different cyclist and pedestrian collectives. On the fringes of the automobility system, tourists and residents create and participate in mobile assemblages (crowds, crossings, flows) among speeds, routes and rhythms that both compete and coexist. This competition restrains the connectivity, conviviality, and sensory qualities of urban spaces and dominates everyday mobility rhythms (Dowling & Simpson, 2013). By contrast,

the active mobility patterns analyzed in this paper show an alternative of sensory and flexible qualities of that do little to encumber the free movement of other urban users (Sheller, 2018).

Secondly, our analysis makes visible that urban (active) travel and tourist infrastructures are porous, as they tend to be used by residents and visitors in patterns that shift along with the series of transformations related to touristification and sustainable mobility. In this sense, it is notable that tourism-induced pedestrianization in central streets offers 'refuges' for cycling in fast, busy and noisy spaces. Without careful coordination, however, new transport corridors that potentially make urban mobilities greener and less conflictive may expand tourist infrastructures and inhibit public space (Oscilowicz et al., 2022). Embedding inclusive, healthy travel forms in the everyday mobility patterns of the city thus cannot go without considering visitor mobilities as an integral and relational product of space. This leads to concrete implications to coordinate and integrate transformative urban planning and design initiatives that prioritize wellbeing and urban qualities while steering away from potential conflicts between mobilities. In the context of Barcelona, urban mobility transitions accrue to the controversies around gentrification, as they unlock spaces to visitors and create new mobility hegemonies embedded in a history of urban regeneration, putting to the test the social tolerance towards tourism (Russo & Scarnato, 2018) and the availability of resident-oriented amenities and social infrastructures (Layton & Latham, 2021). At the same time, our findings suggest that cycling is prone to conviviality and more proportionate to dense urban tourist centers than widespread motorized vehicle access.

Thirdly, the engagement of this study with older age groups' mobility barriers exposes the intricate challenges for advancing proximate mobilities in a context of population aging and uneven urban change. It underlines the need for a cross-sectoral age-friendly approach to tourism and tourist mobilities that builds on the rights to the city of different age groups and identities (Menezes et al., 2023), as offered by the AFC-concept. The physical and cognitive capabilities older people need to negotiate the liminal spaces for cycling challenge its very durability as everyday mobility option in later life (Jones et al., 2017), while this group is also prone to tourism-related exclusion risks (Cocola-Gant & López-Gay, 2020). Accordingly, debates around tourism mobilities would benefit from stronger engagement with disciplines in which the increasingly heterogeneous mobility needs and preferences of the aging population have become mature subjects of research (Curl & Musselwhite, 2018; Murray, 2015; Yarker et al., 2024).

6. Conclusions

Wrapping up, our engagement with space use and mobile interactions, informing on bodily experiences of friction and negotiation, makes the case for a closer consideration of aging and aging studies in debates on urban mobility and tourism planning. This could stimulate the understanding of age-specific exclusions related to tourist mobilities that challenge rights to the city, not just in later life. A second argument arising from this work is that, in studying tourism mobilities, the strain of motorized traffic may have been taken for granted when theorizing their impacts on residents' experience of the city. Instead, we have provided insights on conflictive behaviors between residents and visitors happening at the margins of the automobility system and leading to mobile interactions that oppose what (older) inhabitants require to move around safely.

Future research on tourism mobilities may further explore the fixed distinctions between visitors and locals, as this article found additional evidence of residents' leisure performances as part of everyday active mobilities, for which the urban tourist infrastructures acquire 'unplanned' value. In contrast to the observed disruptive nature of mass tourist mobilities, this finding suggests that a more balanced relationship between proximity-oriented mobilities and tourist space is possible. This could inform a new take on urban (mobility) policy, tackling the intricate regulation of space through new infrastructure and their translation into tourist spaces, as shown in the case of cycle lanes. Cities like Barcelona may thus adopt an integral approach to planning and designing for the growing use of active travel and micro-mobilities while addressing the fluid and embodied space pressures exercised by tourism. Mobility transitions favoring active modes may thus be helped by, on the one hand, curbing the mass inflow of short-term visitors and the spatial concentration of their activity patterns, and, on the other hand, by reducing motorized traffic space. This would make way for active uses of the city and is receptive to the

domestic tourism and leisure practices exercised in a wider shift towards more people-centered mobility systems.

This study is limited by the small sample size, which restricts our capacity to analyze specific participant segments such as gender, older age groups, travel mode, or bicycle type. Nevertheless, its deep and multi-method engagement with mobility trajectories and experiences warrants this selective approach, as we made insightful the multiple relational dimensions that come into play when adopting an age-specific focus to mobility hindrances in dense tourist centers. Our focus on active modes in tourist areas calls for further quantitative and qualitative exploration of residents' and visitors' uses of new active travel spaces to pre-empt new frictions that reproduce tourism's expansive powers and may reduce the social, health and livability benefits of active mobility transitions.

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Ethics approval statement

All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional research committee. The research was done as part of the ENTOURAGE project which received approval by the Research Ethics Committee for Research on People, Society and the Environment of Rovira i Virgili University under case number CEIPSA-2021-PR-0037 on 28 January 2022.

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Data availability statement

The data that support the findings of this study are available from the corresponding author upon reasonable request.

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