

Article

Mobility Policies and Extra-Small Projects for Improving Mobility of People with Autism Spectrum Disorder

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Abstract: The paper focuses on the relationship between cities and people with Autism Spectrum Disorder (ASD). Specifically, this research aims to provide practical guidelines on how to design urban policies and urban design projects, such that they improve the capabilities of people with ASD to walk across the city and access relevant public urban spaces and facilities. Although this is a well-defined field of research, this paper should be seen as a contribution to the debate on the understanding of disability as a product of processes of human-environment interaction and as an attempt to address issues of mobility for people with disabilities by taking into account their personal characteristics and capabilities. Current methodological and operational efforts on the role of spatial configuration as a means for improving the autonomy of people with ASD focus almost exclusively on the design of closed, separated, private spaces, devoted only to people with ASD (mainly children). Starting from these considerations, the paper describes a research project aimed at defining an integrated set of urban mobility policies and extra-small urban design projects to provide people with ASD a real opportunity of using their city.

Keywords: urban capabilities; people with ASD; urban mobility policies; quality of urban life; disadvantaged people

1. Introduction

The relationship between cities and people with Autism Spectrum Disorder (ASD) is a rarely discussed topic. From this standpoint, the research aims to provide practical guidelines on how to define an integrated system of urban policies and urban design projects specifically aimed at improving the autonomy and safety of people with ASD. It attempts to make walkable access to the most relevant public urban spaces and facilities possible.

Although this is a well-defined field of research, this paper should be seen as a contribution to the debate on the understanding of disability as a product of processes of human-environment interaction, an attempt to address mobility issues faced by people with disabilities by taking into account their personal characteristics and capabilities [1]. Our intent in exploring this topic is not only to provide urban planners and urban designers with a framework that can be used as a designing guide, but also to further investigate the possibility to go beyond an interpretation of the concept of quality of urban life solely based on a “quantification and ranking” approach and to instead adopt an individual-centered perspective [2–4].

Current research and applications aimed at exploring the role of spatial configuration as means for improving the autonomy of people with ASD focus uniquely on the definition of criteria for the design of closed, separated, and private spaces, exclusively devoted to people, in particular children, with ASD (i.e., assisted living residences, day care centers and schools, healing gardens, etc.) [5–13].

The knowledge developed so far on the disorder increases continuously, since both the definition of ASD as well as its causes and diagnostic framing have been and are being subjected to continuous integration and remodeling [14]. The most recent definition of the disorder includes autism within a “spectrum” that can appear according to an extremely variable gravity scale (from a low to a high functioning level) [14–16]. Specifically, the autism spectrum disorder is characterized by persistent deficits in mutual social communication and interaction, by the presence of restricted interests and repetitive behavior, and by sensory perception issues, all with great variability among individuals [15,16].

According to the European Commission, ASD is the most widespread developmental disability in the world today [16,17]. The increasing incidence of ASD (Centers for Disease Control and Prevention’s prospects estimates 1 in 59 children identified with ASD in the United States (April 2018)) and the need to guarantee the actual opportunity to exercise the achieved level of autonomy and independency during adulthood (reaching adulthood entails the loss of a set of support services guaranteed only until the age of majority) are the main reasons that lead us to believe that it is necessary to broaden research perspective by investigating the specific contribution of urban mobility policies and urban design projects that enhance the quality of life of people with ASD as well.

Starting from these considerations, the present paper describes an ongoing research focused on defining an integrated system of urban mobility policies and extra-small urban projects [18] aimed at providing real opportunity to people with ASD to get around cities.

In the second section of the paper, we discuss the link between urban planning theory and practices and capabilities [2–4]. In fact, we suggest that the capability approach could be profitably deployed as a theoretical and methodological framework useful for designing and assessing policies and projects aimed at improving the quality of urban life of the most disadvantaged people [19,20], including—as Robeyns suggests in her recent contribution [21]—people with ASD.

The third section offers a brief illustration of the methodology followed in the research.

In the fourth section, we describe the commonly recurring problems that people with ASD face when they interact with the urban environment in their everyday life.

Supported by the results of an in-depth analysis of existing contributions (both research and specific projects; as for example: Sunfield Residential Unit; Whitton Gateway ASD Unit; New Struan School; Mossbrook School [22,23]; Developmental Learning Center of Warren (New Jersey) [24]) and by an exchange with different experts (neuropsychiatrists, psychotherapists, teachers, and parents), we introduce a set of requirements to design an autism-friendly city.

Finally, we propose operational “translation” of such requirements into an integrated system of urban mobility policies and extra-small, low cost, and scalable urban design projects at the neighborhood scale, aimed at enhancing the actual possibility for people with ASD to walk autonomously and safely and to access relevant public urban spaces and facilities. The research activity includes an application of this strategy to a neighborhood in the city of Sassari, Sardinia. Since the research process is currently underway, we selected the pilot context in agreement with the municipality and, with the support of experts, formulated an initial set of policy interventions to implement (fourth section). The proper test is programmed for September/October 2018.

2. Urban Planning and Individual Capabilities

As some authors [2–4] and scholars [25–29] have argued, capability approach [30,31] could provide a framework for redefining the concept of the quality of urban life. This is particularly relevant with regard to the need to address urban issues of the most disadvantaged inhabitants, including people with disabilities [19,20,32].

To redefine the concept of quality of urban life through the looking glasses of the capability approach means to focus on the actual possibility for each inhabitant to use the city in order to pursue functionings they have reason to value, rather than just measuring intrinsic urban functions and features and assuming that they can be automatically converted into an overall (pre)determined

well-being level. In other words, it means to adopt an individual-centered perspective and to focus on the inhabitant-city interaction, not on the city itself [2–4,25,26].

The reference to capability approach invites a reflection on the practice of planning standards and suggests a possible operative route for the integration of the information used for describing and evaluating the spatial component of the quality of life. Referring to individual functionings and capabilities, in fact, entails the need to consider as relevant not only the information useful for enumerating and quantifying urban public spaces and facilities, but also the information describing what use people make (or do not make) of them [2–4,25,26,32–36].

As Robeyns [21] points out, it becomes particularly useful to enhance the quality of life of disadvantaged groups of individuals, such as people with ASD, whose functionings and capabilities are most limited by the intrinsic configuration of the built environment. In fact, even when urban policies and projects may seem apparently neutral, they can produce spatial configurations and organizations that tend to exclude some individuals if, and when, they are not capable to recognize the variability of the characteristics and abilities of such individuals.

Thus, the definition of operational requirements, planning and design actions attentive to the specific abilities of people with ASD becomes fundamental to enhance their well-being by ensuring better conditions of independence in their use of the city.

3. Overview of the Research

As stated in the introduction, at the time of drafting this paper the field experiment had not been carried out, since the research project commenced only recently and the test phases require a strong coordination among the stakeholders involved at different levels of the process (planners, ASD experts, local offices and authorities, young people with ASD and their families). Great effort will be especially required around the planned involvement of a sample of adolescents with ASD supported by their caregivers under the supervision of the Department of Child Neuropsychiatry of Sassari. Thus, the purpose of this paper is to present and explore the theoretical, methodological and operational assumptions of the research; the results of the pilot test will be the subject of a subsequent paper. The test of some initial actions is scheduled for September 2018, with the support of local authorities.

That being said, the final aim of the research is to provide operative tools to implement the improvement of the recognizability of urban places and services and of their physical accessibility, such as structured paths which can make it easier for people with ASD to reach relevant public spaces and facilities.

The methodological process followed during the research may be divided into four distinct phases, all strongly interrelated.

First, we concentrated on the disorder, focusing on those unmet needs that can be at least partially addressed through spatial interventions (broadly speaking).

We then defined a set of spatial requirements for the design of an autism friendly urban environment, based on a review of the few available contributions and actual projects.

To better understand the disorder and to identify the most common problematic circumstances that can occur in daily life when using city spaces, we organized and conducted several meetings with experts of ASD at different levels: associations of parents (i.e., ANGSA Sassari Onlus), special-needs teachers, and child neuropsychiatrists (University of Sassari, Cagliari Brotzu Hospital Corporation).

Specifically, we conducted several in-depth, non-structured interviews with child psychiatrists of the University of Sassari and of the Cagliari Brotzu Hospital Corporation, in order to improve the body of scientifically grounded knowledge on autism relevant for the specific objectives of the present study, and to identify the recurring problems of people with ASD that can be at least partially addressed through spatial interventions.

We then organized and conducted several meetings with a few special needs teachers (of primary school “Sandro Pertini” of Sassari) with adequate experience in using Augmentative and Alternative Communication (AAC) to support children with ASD and a focus group with a larger group of special

needs teachers to explore the devices and external equipment (such as communications boards with drawings and cards with pictures) used in low-tech aided AAC, with the intent of understanding if and how they could be integrated into the conventional urban signage system (AAC is a clinical practice used to support comprehension and expressive communication of individuals with complex needs, including people with ASD. One typical AAC aided strategy resorts to external assistance in the form of picture cards, electronic speech devices or alphabet boards).

Moreover, we involved the parents of children and adolescents with ASD from ANGSA Sassari Onlus, in all the phases of the research. At the very initial stage two activities were conducted: (1) an in depth, non-structured interview with the association representatives to check the feasibility of the idea and their availability to collaborate and (2) a meeting with all the members to present the project and to obtain some preliminary indication. After the definition of the draft of the guiding requirements for transport policies and urban design projects oriented to enhance the autonomy of people with ADS in urban space, we organized a focus group with about 30 parents with the intent to adjust spatial solutions according to their advice and prioritize them.

Finally, the action-research approach requires to “put to the test” in a real urban context the assumptions attained since the first stages, in order to translate them into a set of real interventions and calibrate their effectiveness. For this purpose, we decided to outline a set of actions for a neighborhood of the city of Sassari (Sacro Cuore) selected as a pilot context in agreement with both the association and the Department of Urban Mobility of the Municipality of Sassari. The plan includes urban mobility policy measures and extra-small projects defined according to ASD experts and the literature in the field of planning to be implemented with the intent of endowing the built environment with favorable conditions for the living experience of people with ASD.

4. People with ASD and the Environment

Autism is an umbrella term used for a range of heterogeneous neurodevelopmental conditions, characterized by persistent deficits in social communication and social interaction across multiple contexts, and restricted, repetitive patterns of behavior, interests and activities [16].

In the present paper we highlight those aspects that are important for the quality of urban life of people with ASD and that can be at least partially addressed through spatial interventions.

People with ASD tend to have a problematic relationship with their surrounding environment. In fact, their behavioral problems are not just mere consequences of a different functioning of their central nervous system: they are in fact atypical responses due to altered sensory perception [37].

This issue is one of the most relevant to our research, as the daily life of people with ASD is negatively affected by their altered sensory perception [37].

Since the disorder manifests itself in a wide variety of ways (the sensory experiences of people with ASD depend on their “position within the spectrum”), it has been essential to identify the recurring behavioral problems that characterize the relationship between the individual with ASD and the urban environment, in order to define a set of spatial and sensory design requirements needed to improve urban accessibility and walkability level and quality.

By consulting experts on ASD at different levels, we obtained feedback useful to understand the disorder better, identify recurring problems and define possible solutions by removing or reducing spatial obstacles and providing spatial facilitators [1].

In this respect, we identified three “atypical urban functionings” [20] of people with ASD:

1. Sensory perception problems
2. The need to communicate using the support of images/pictures/symbols
3. The need to follow a routine and use schedules and visual instructions to acknowledge and praise the successful completion of a given accomplishment.

In strict connection with the three “atypical urban functionings”, we identified two main objectives, each of which refers to a specific set of requirements useful to design urban policies and extra-small urban design projects able to enhance the autonomy of people with ADS in urban spaces:

1. Reduction of sensory overload
2. Use of visual supports and visual agenda.

The first one considers the problem of sensory overload management in the urban context [37]. Studies, research and autobiographical narratives of individuals with ASD [37–40] reported traffic noise as the main obstacle preventing people with ASD from walking. Therefore, the first necessary condition to increase accessibility, autonomy and safety is the adoption of sensory mitigation measures to reduce both car movements and noises.

As a consequence, the first proposed action concerns the introduction of traffic regulation policies at the neighborhood scale to reduce the volume and speed of cars passing through local roads as well as their acoustic impact, thus improving pedestrian comfort, safety and accessibility. Taking the Barcelona Urban Mobility Plan (2013–2018) as a model, we defined pedestrian priority super-blocks. We referred to the Barcelona experience because it is a recent, real and comparatively low-cost example of urban planning process conducted by integrating mobility and urban development with deliberate attention to pedestrians and vulnerable users. The mutual coordination between transport and land use actions supported a living environment that is more livable and conducive to walking thus encouraging all categories of inhabitants to move about with more autonomy and safety.

Within such super-blocks, streets have low speed limits and parking is authorized exclusively in dedicated sites located at the entrance points. By using physical and perceptive impedance solutions (raised pedestrian crossings, extension of sidewalks at intersections and crossings or extension of the whole sidewalk narrowing road width and reducing parking areas, greenery, and so on) residential cut-through traffic is discouraged, providing the users with a higher sense of comfort and safety.

The second key requirement is based on the importance of using visual supports and visual agenda. To understand their surrounding environment, people with ASD need the support of images/pictures/symbols that represent objects and actions. An integrated system of vertical and horizontal signage with images and appropriate colors may facilitate orientation and recognition of urban places and services. In our first proposal we used two colors: one to indicate the direction to follow (blue) and one for critical spatial changes (red); for example, a difference in height on the route. In fact, color is an important orientation device used in visual support in the therapeutic treatment for people with ASD. For example, the color red appears in several pictures of the AAC to symbolize the “stop” action.

Furthermore, people with ASD are extremely methodical, and it is very hard for them to accept changes in the normal ritual of daily actions. Planning activities of everyday life is thus indispensable. For that purpose, people with ASD and their caregivers commonly use visual agenda: written or visual guide describing various social interactions, situations, behaviors, skills or concepts [41]. Using such schedules and visual instructions, people with ASD can learn in advance the ordered succession of the activities that they have to follow during the day and the sequence of the micro-actions needed to carry out a complex activity. An urban signage system corresponding to visual agenda to be placed in the vicinity of important daily life places and facilities and in general at the beginning of preferential paths as well as before potentially dangerous or ambiguous situation (such as pedestrian crossings, for example), may provide a useful and effective communication support to enhance people with autism’s independence and participation in the city. The provision of sequences of urban actions is essential because it guarantees that people with ASD can be prepared for what will happen next.

5. Case Study

The first results of the research have a guidance character and have been used to inform an initial set of measures to be “put to the test” subsequently on a real urban context. We selected the Sacro Cuore

neighborhood in the city of Sassari as the pilot neighborhood and we designed a plan of policies and micro design interventions. The next step will be the implementation of the strategy in the study area. During the trial period, programmed for the last months of 2018, a group of adolescents with ASD facilitated by their caregivers, families and medical staff will be involved in testing the effectiveness of the proposed actions and calibrating the effects.

5.1. Characterisation of Sacro Cuore Neighborhood (City of Sassari, Sardinia)

The Sacro Cuore neighborhood is a representative case study for the purposes of the research.

In fact, its location within the urban area, spatial structure, demographic and socioeconomic characteristics, presence of services and facilities practiced by many people with ASD and their caregivers, and the daily use of urban space make the Sacro Cuore neighborhood an interesting context of investigation and application for novel solutions, both replicable in other neighborhoods and scalable at the city level.

More precisely, two main reasons influenced the selection of Sacro Cuore as pilot study area: (1) the spatial characteristics that make the neighborhood suitable to implement a set of integrated land use and transport policies aimed at enhancing people's safety and autonomy and inspired by the model of Barcelona superblocks; (2) the familiarity with the neighborhood of the "ASD community" of Sassari due to the presence of two supporting facilities that have become important reference places for people with ASD, their families and caregivers: the primary and secondary school and the association of parents ANGSA Sassari Onlus. In fact, the schools in Sacro Cuore, together with that of Via Gorizia (another neighborhood), host the majority of children and adolescents with ASD of the city of Sassari, and the association members meet up at the oratory of Sacro Cuore Basilica.

The neighborhood was developed between 1930 and 1950. It was one of the first public housing project areas in the city of Sassari. Today it has a population of about 3000 inhabitants, with median age 45, medium-low income and a prevalence of households composing of a single person (39.5%). Compared to the average of Sassari, the neighborhood has a higher percentage of old people (21.87% vs. 19.65%) while the number of young people is equal (12.44% vs. 12.43%). A compact urban fabric with regular blocks of three-storey residential buildings aligned along streets is arranged radially around the main square of the Sacro Cuore Basilica.

Basic local services such as the post office, primary and secondary school, church, sport facilities, grocery stores, banks, coffee shops and a few other retail activities are scattered throughout the area, at the ground level with direct access from the road. Many of them are concentrated on Corso G. Pascoli, an arterial road that borders the neighborhood to the East and connects with the city center and the surrounding residential areas. The neighborhood is well served by the transportation system, with bus lines running on the edge arterials and bus stops within walking distance (300 m). Sidewalks are present in all streets but have different widths according to their role in the network system. Trees on both sides of streets, and benches located only in a few places, enhance the comfort of pedestrian spaces.

In general, the observed urban design qualities create an inviting pedestrian environment. This assertion is also confirmed by the medium-high score of walkability obtained for the Sacro Cuore neighborhood using the capability-wise walkability score method [42] which evaluates how a place is conducive to walking, based on the presence and variety of urban destinations, their distance and the quality of the urban environment traversed when walking to destinations.

However, despite the confined dimension of the neighborhood with destinations located at walking distances from dwellings, the internal, secondary streets are characterised by passing traffic and are overcrowded with on-street parked vehicles which generates traffic congestion and its related disturbances entail a high level of sensory stimuli: noises, confusion, people and vehicles assemblage. Consequently, during rush hour the neighborhood's walkability is compromised, especially along the routes to schools, and sport and public facilities. Furthermore, the walking space is often occupied by parked cars, even along pedestrian crossings and bus stop areas, with unpleasant consequences in terms of reduction of visibility, interruption of the continuity of paths and limited accessibility to

urban facilities. Besides, sidewalks are characterized by the presence of several obstacles (trash bins, bumps, light posts, trees, and bus stop areas, among others) that reduce the already little available walking space.

All these factors negatively affect the walkability of the neighborhood and require careful planning and design actions aimed at improving the actual possibility to walk autonomously and safely and to access available public spaces and facilities.

5.2. First Possible Interventions

Urban regeneration is a long-term process that implies a sequence of combined actions, each with a specific role and some with a triggering potential.

Besides the time required for the implementation and coordination of actions, considerable economic resources are also needed for spatial changes related to the new rules of use, as well as for information and communication programs that complement planned transformations. For these reasons our research is more inclined towards policy actions and practical solutions that are feasible in the short-term, low-budget, reversible and modifiable, and can lay the way for a more durable re-organization of urban space.

According to this view, we believe that traffic regulation policies like the ones implemented in the above-mentioned Barcelona Urban Mobility Plan could significantly improve pedestrian accessibility, comfort and safety in the Sacro Cuore neighborhood, and its overall quality of urban life. The superblock model, experimented recently in some neighborhoods of Barcelona, offers an operative solution to meet the specific demand for wider, more comfortable and pleasant portions of urban space for public use, and to the concurrent demand for efficient mobility across the city according to the principles of sustainability. The main concept is to reduce the disturbing impacts of vehicles and to return the public space to the citizen making walking trips convenient and safe (<http://www.bcnecologia.net/en/conceptual-model/superblocks>). Considering that: (1) Sacro Cuore is a residential neighborhood, characterized by the presence of local, small commercial activities; (2) only children (aged 3 to 13) who live in the neighborhood attend the schools located therein; and (3) the width and physical characteristics of the surrounding streets are suitable to accommodate the expected resulting traffic growth (still comparatively low), policies aimed at discouraging through traffic are not only desirable but also highly feasible.

Moreover, the neighborhood is characterized by the presence of several abandoned extra-small spaces, which, over time, could be converted into a network of micro public spaces, starting with tactical projects located at strategic locations based on low-cost, multifunctional and flexible spatial solutions (Figure 1).

According to our planning and design strategy, the first action to implement (which acts as an essential prerequisite for the development of the subsequent ones) is the definition of a low-speed block to discourage through traffic, therefore reducing sensory stimuli. This could be pursued using close to zero-cost solutions, as a one-way street system with very low speed limit, specifically designed for making it too disadvantageous to traverse the block from the outside for those who are not reaching a destination inside the neighborhood (Figure 2).

This measure needs to be combined with other traffic-calming solutions, such as raised pedestrian crossings, located in the front of the main entrance of schools and near main public spaces and facilities (Figure 3), as well as parking relocation and restrictions.

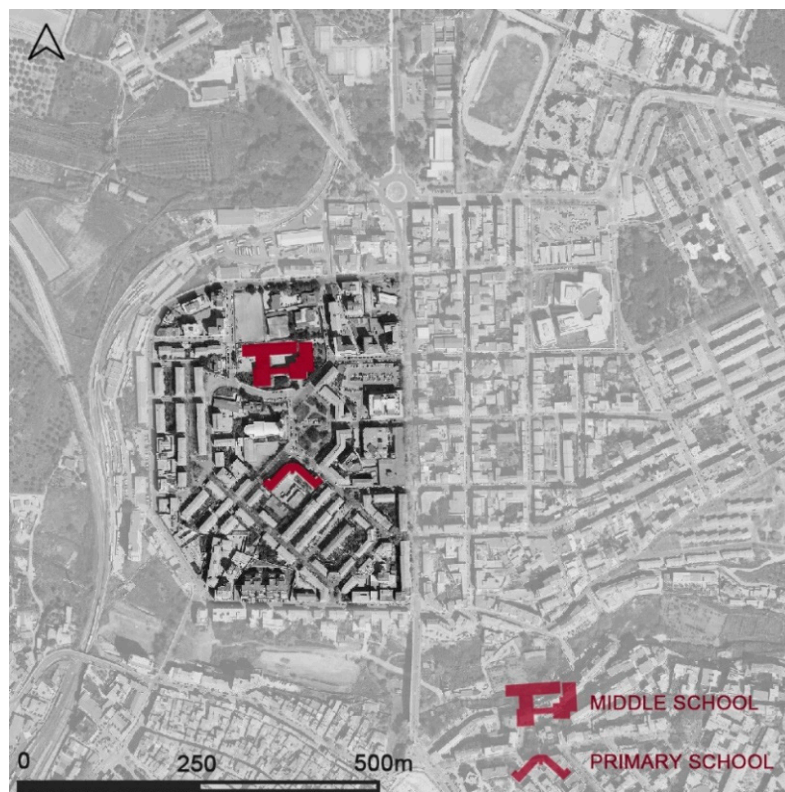


Figure 1. The Sacro Cuore neighborhood (Sassari, Sardinia).

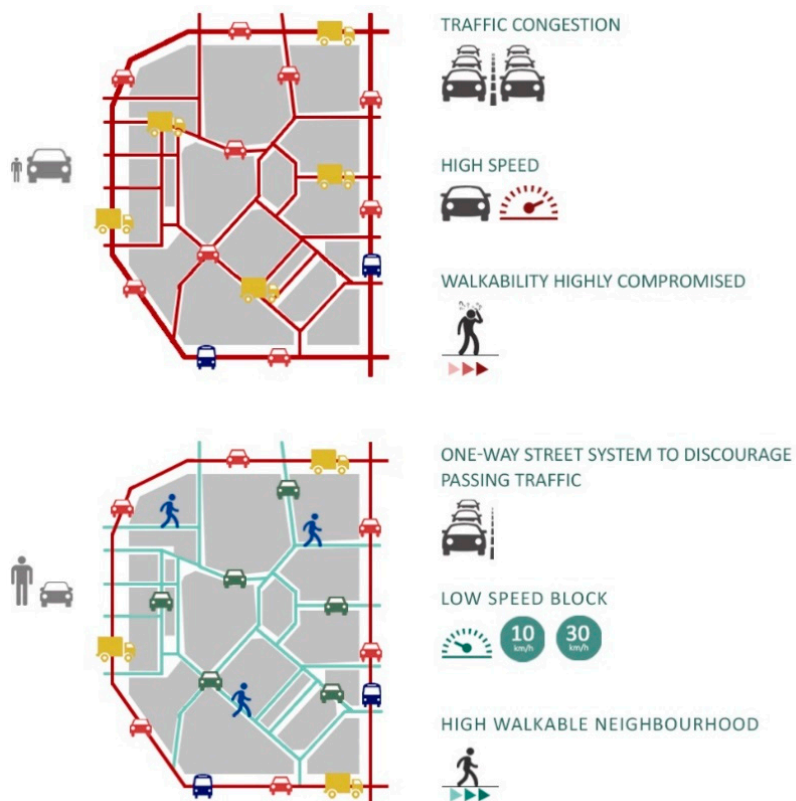


Figure 2. Traffic regulation policies.

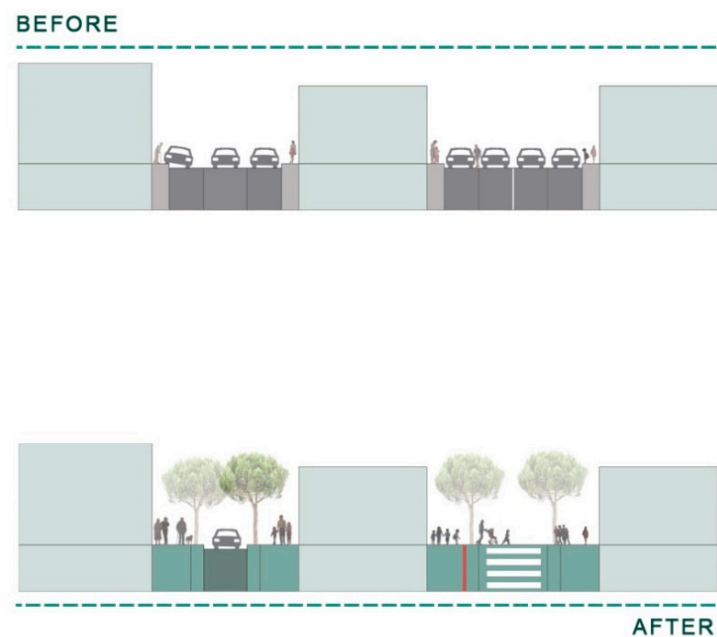


Figure 3. Traffic-calming solutions.

To avoid the overwhelming number of parked vehicles along the internal streets, we propose to limit parking areas to the entrance parts of the block (apart from parking lots devoted to people with disabilities as well as loading and unloading areas) (Figures 4 and 5).

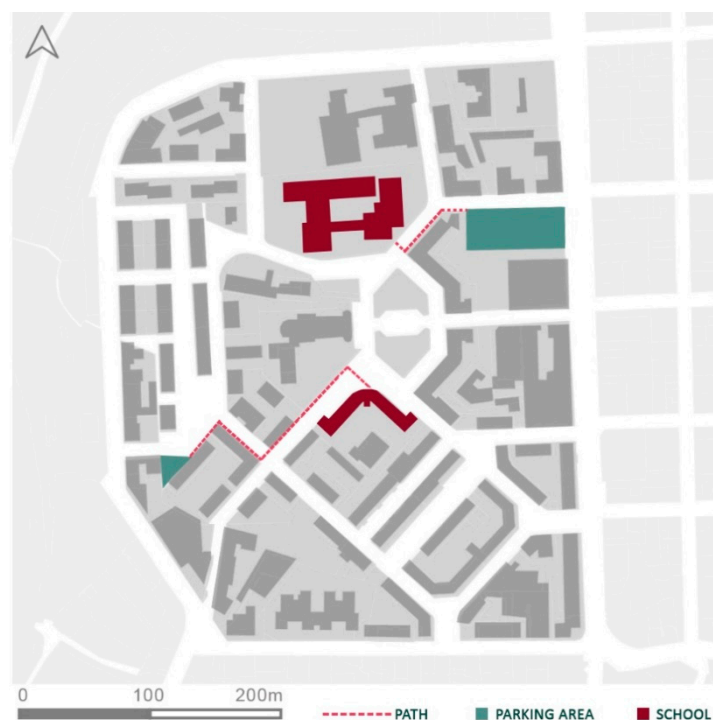


Figure 4. Equipped enabling paths-plan.

Physical and sensory accessibility and walkability can be facilitated by the design of a properly equipped “enabling path” intended as a preferential route more appropriate for people with ASD.

To reduce the risk of sensory overload we propose to provide the enabling path with a number of “quiet spaces”: protected extra-small spaces located in continuity with the sidewalk, characterized by a good visual relationship with the surroundings and designed with specific attention to sensory quality

(number and location depend on the path's length and on the sensory stimulation level of the traversed environment). In our proposal, quiet spaces should replace some of the existing parking lots along the sidewalks. The aim of quiet spaces is to guarantee the presence of low-stimulation areas [43] (Figure 6).

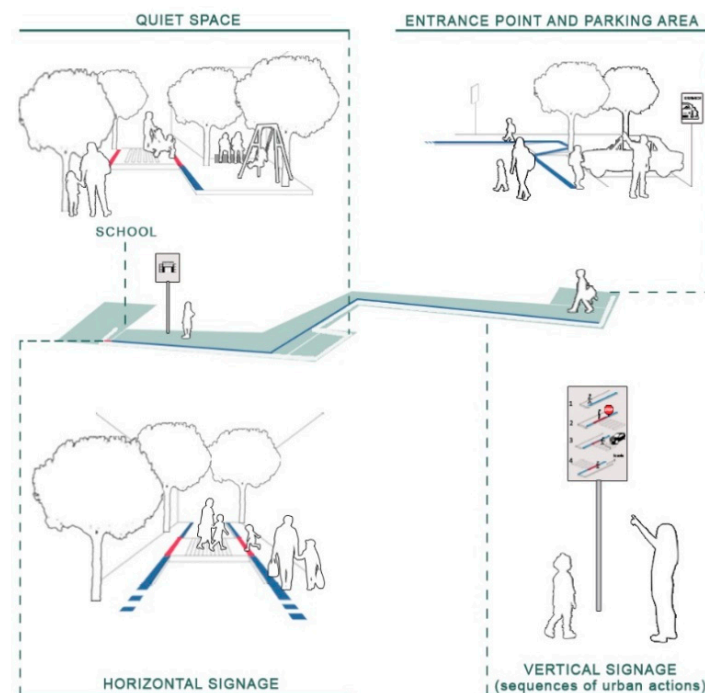


Figure 5. Equipped enabling paths-detail.

QUIET SPACE

- EXTRA- SMALL SPACE
- CONTINUITY WITH THE SIDEWALK
- GOOD VISUAL RELATIONSHIP WITH SURROUNDINGS
- DESIGNED WITH SPECIFIC ATTENTION TO SENSORY QUALITY

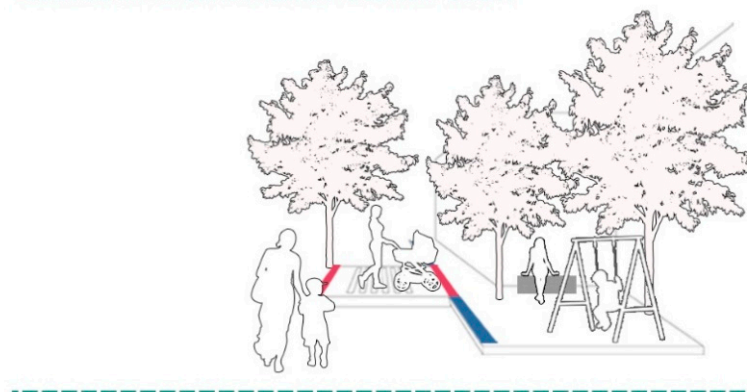


Figure 6. "Quiet space".

The need to communicate by means of images/pictures/symbols, i.e., the need to use visual supports, is addressed by introducing specifically designed vertical and horizontal signage. In order to avoid ambiguous interpretation, only two colors are used: a cold, relaxing color (blue), whose function is to direct and to accompany people with ASD along the path; and a warm color (red), designed to draw attention in case of changes or dangerous/ambiguous situations (Figure 7).

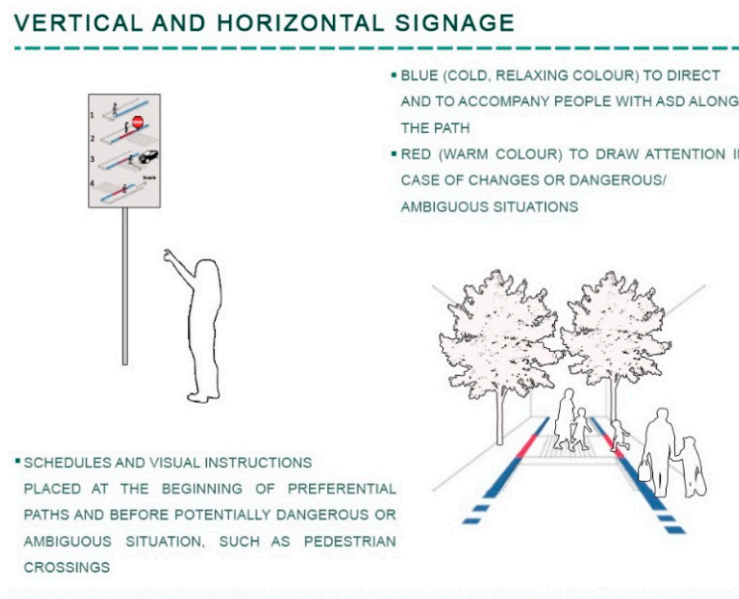


Figure 7. Vertical and horizontal signage.

As already stated in the previous sections, the abovementioned policy measures and micro-design actions represent a first set of operative proposals aimed at enhancing the autonomy of people with ASD at the neighborhood level. They have been conceived together with experts of ASD (families, neuropsychiatrists, special needs teachers) and are context-oriented. Special attention has been paid to the structural characteristics of the selected pilot neighborhood in order to make the implementation possible and easier and to achieve a response about their effects on the pedestrian accessibility of young people with ASD. The subsequent phase, directed to test and observe the effects on the behavior of people with ASD in this space, will offer empirical knowledge for the following stages of the research (devoted to measuring the reliability of results) and to evaluate the performance of the implemented policies for better calibration and further advancements.

6. Conclusions

The spatial component of the quality of life clearly depends on the presence of urban “opportunities” (public spaces, services, and information, among others) and their distribution within the urban environment. However, these opportunities are just means (not ends) to guarantee and improve the quality of urban life and, as such, their presence and distribution are not sufficient criteria for defining and assessing the quality of urban life for the inhabitants. In fact, cities are characterized by the presence of a vast amount of available opportunities and, at the same time, by great inequality in terms of a real possibility to access and “use” them.

Therefore, we need to find a way to combine the enumeration and sizing procedures of urban opportunities with the description of multiple and variable interactions between these urban opportunities and the different individuals, with specific attention on the most disadvantaged categories [19]—children, women, elderly people, and people with different disabilities—who have an “atypical” way of functioning [20].

In this paper, we have argued that the capability approach provides a promising framework for a working definition of the quality of urban life for these disadvantaged groups of citizens, including people with ASD.

In the attempt to give a partial answer to the question posed by Robeyns [21]—“Which are the capabilities that draw our attention if we examine them from the point of view of autistic lives?”—we have focused on the capability of walking autonomously, for two main reasons.

First, that the recognition of the urban right to access all the relevant available urban opportunities is closely related to the achievement of an overall level of autonomy (for example, in terms of employment opportunities, especially important for adults with ASD).

Second, that urban mobility policies and urban design projects suitable for individuals with ASD are, at the same time, capable to enhance the level and quality of walkability and accessibility—and, consequently, the overall quality of urban life—in favor of other groups of vulnerable citizens. For example, the enabling paths (Figures 4 and 5) can be used by children as safe routes to school, the quiet spaces (Figure 6) can be used as rest areas by elderly people or people with reduced mobility and as extra-small playgrounds by children, and so on.

It is not possible, nor desirable, to reduce the richness and complexity of the city to a sum of targeted actions. However, we do believe that introducing the requirement of taking into account the specific needs of the most vulnerable groups of citizens in the urban design process is not only an interesting challenge for urban planners and urban designers, but also a sustainable and not-homologated way to promote that richness and complexity.

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