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Through participatory methods we identify how spaces affect the comfort of autistic college students through clarity, distractions and spatial control.

Space for and by autistic students: Leveraging lived experiences to inform design interventions

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Organisations in various domains seek cognitive talents beyond those who use their brains in typical ways, including talents associated with being autistic.[1] At the same time, several barriers prevent autistic people from joining the workforce.[2] A major barrier relates to higher education: while autistic people who attend college seem to have better life outcomes compared to those who do not,[3] college students on the autism spectrum tend to have lower completion rates than their peers.[4]

Like their peers, autistic students may experience college life as challenging because of stress, fear of failure, or lack of motivation. However, autistic students may also encounter additional difficulties related to independent living and social communication, causing discomfort and anxiety.[5] Due to prior negative experiences with misinterpreting non-verbal communication,[6] they might perceive socialising, for instance in the context of group work,[7] as threatening. Compared to their peers, autistic students may also experience more difficulties with concentration during lectures and exams, impacting their ability to study[8] and consequently increasing their stress levels.[9] Moreover, their specific way of interpreting the world can make their environment appear disorientating and frightening.[10] As a result, students on the autism spectrum in particular face an increased risk of developing major psychiatric illnesses during college years.[11]

To provide autistic students with equal opportunities to graduate, higher education institutions are obliged to implement inclusive education practices.[12] Yet inclusivity in higher education often centres on academic accommodations or support services, while the role of the built environment – the design of the campus, buildings, and spaces – has received far less attention. Just like faculty and staff may be unfamiliar with how to teach or support students on the spectrum,[13] design researchers and designers may have misconceptions about autistic people's needs and preferences in relation to the built environment.[14] Due to the lack of information and direct contact with end users, designers could make incorrect choices while designing.[15]

Researchers also note that autistic people become distrustful of researchers and their aims.[16] Regaining trust, autistic adults and their peers highlight, requires According to autistic adults and their peers, regaining trust requires more awareness and knowledge exchange between researchers, professionals, and the public to avoid misconceptions.[17] Therefore, focusing on the priorities of students on the autism spectrum is necessary for researchers to understand what is worthy of scholarly attention and to learn from students' perspectives on the university as built environment.

In general, the built environment – and its spatial and sensory qualities – affect autistic people's quality of life and shows potential to improve it.[18] Design scholars have proposed guidelines for autism-friendly designand suggest design interventions to positively impact autistic people's daily lives.[19] For example, in designing buildings and spaces, architects can contribute to predictability, consistency, and structure in time and space.[20] However, most existing research on autism and the built environment has focused on contexts such as primary schools or residential settings, with limited attention to higher education. As a result, there is a noticeable gap in knowledge about autistic students' experiences within university settings.

Our study seeks to address this gap by exploring how our university as built environment affects the routines and experiences of five autistic students, and how it might be adapted to better support their college life. Based on the insights gained, we invited a student organisation to make the venue of their main event – the transformation of a unique, vacant location into an activity and meeting hub – more autism-friendly, and we attended the event with the autistic students to assess the organisation's interventions.

Architecture *for and by* autistic people

Over the past two decades, researchers have increasingly identified environmental factors that particularly impact autistic users. For example,

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Magda Mostafa proposes seven guidelines that can aid in design: acoustics (controlling noise and echo), spatial sequencing (predictable, structured layouts), escape spaces (readily available safe havens), compartmentalisation (distinct zones to reduce sensory spillover), transitions (gradual sensory changes between spaces), sensory zoning (grouping spaces by sensory intensity), and safety (physical and emotional security).[21] These principles aim to mitigate the sensory and cognitive overload that chaotic environments can cause for autistic individuals. An 'escape space', for instance, is a place where one can retreat when overwhelmed;[22] it is not necessarily a dedicated room but can be a quiet corner or a space under a staircase.[23] Such personal refuges can help autistic people destress and regain comfort without having to leave the building.[24] Pilar Arnaiz Sánchez and others similarly argue that traditional approaches to accessibility – which focus primarily on physical access through ramps, elevators, and similar features – are insufficient for autistic users; social and sensory accessibility must also be addressed.[25]

Multiple studies in educational settings have reinforced these insights. Keith McAllister and Barry Maguire note that many architects lack specific knowledge about autism and that existing design guidelines tend to be generic, failing to address the wide spectrum of needs.[26] In the context of primary education, they propose tailored design strategies – such as controlled lighting, reduced visual clutter, clear spatial organisation, and acoustic dampening – to help autistic pupils feel at ease, thereby improving learning outcomes.[27] Their findings highlight the importance of incorporating feedback from both educators and autistic individuals to design more inclusive and less disorienting learning environments. Expanding on this perspective, Wanda Katja Liebermann argues that even well-intentioned designs can unintentionally reinforce segregation when disabled voices are excluded from the design process. She emphasises that meaningful inclusion requires a paradigm shift to believing that disabled people are competent to participate in the process.[28]

Beyond school settings, a growing body of literature explores autism and residential design. For instance, Marijke Kinnaer and others analysed autobiographies of autistic adults to understand their domestic spatial preferences.[29] Autistic residents often value features that provide predictability, familiarity, and control, such as consistent layouts and ability to modify sensory elements. Phuong Lan Nguyen and others have conducted both case studies and a scoping review on housing design for autistic individuals, emphasising that different types of spaces – private, shared, and public – affect users differently.[30] Their findings also point to the mismatch between design intentions and actual user experiences,[31] underscoring the importance of tailored, user-informed approaches.[32] Similarly, Cindy Louis-Delsoin and others emphasise individualised sensory tailoring to reduce anxiety at home.[33]

While existing research offers foundational design principles drawn from primary school and housing contexts, university campuses remain relatively under-explored in autism and design research. More specifically, there remains a need for empirical, in-situ studies focusing specifically on autistic students' experiences within university settings. These settings differ substantially from home or school environments – they are larger, less supervised, composed of heterogeneous spaces (e.g. lecture halls, libraries, dormitories, cafeterias), and require students to navigate more independently. The social demands of college (e.g. living with roommates, participating in group work, navigating crowded libraries) are also distinct. Only recently has research begun to address this gap. Mostafa's *Autism Friendly University Design Guide* outlines campus-specific recommendations[34] that build upon her original seven design principles.[35] In the context of student housing, Elise Tackx and colleagues documented how small environmental adjustments may make a difference for autistic students. For example, a whiteboard in a shared student-housing kitchen allowed an autistic participant to communicate without direct confrontation, thereby easing social tensions among roommates and improving their comfort.[36]

Moreover, while available studies offer valuable insights, a comprehensive literature review on the built environment for autistic individuals highlights how most spaces are still designed based on neurotypical assumptions and often unintentionally exclude autistic users.[37] Melissa Heather Black and others argue that leveraging the lived experiences of autistic people is critical to informing future design decisions.[38] This resonates with what autistic activist Jim Sinclair identifies as the need for spaces *by and for* autistic people. Sinclair describes how autistic individuals have developed their shared spaces – free from neurotypical norm.[39] In such spaces, autistic people define their own needs and make design decisions to meet them, fostering a sense of comfort and belonging that is often elusive in mainstream environments.[40] Notably, Sinclair observes the huge range of variability among autistic people, meaning that a feature which soothes one person (for example, dim lighting or background music) might distress another.[41] This underlines the necessity and challenge of flexibility in design – creating options and adaptations rather than one-size-fits-all solutions.

In addressing this challenge, our study is informed by scholarship in architectural humanities and disability studies that questions conventional design paradigms through the lens of disability. Rather than treating disability as a technical matter by building codes or accessibility checklists, theorists like Jos Boys argue for a more radical rethinking of architecture starting from disabled people's experiences.[42] Boys advocates positioning disability and neurodiversity as generative forces for design innovation, instead of an afterthought at the end of the process.[43] Similarly, Charlotte Bates and Rob Imrie introduce an ethics of care into architectural discourse, urging designers to consider how built environments can either enable or disable

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individuals. They emphasise the importance of moving beyond formal compliance to engage more deeply with the lived experiences of non-normative bodies and minds.[44]

Autistic students' experiences at the centre

In line with the aim of our study, we adopted a research approach that places autistic students and their lived experiences at the centre of inquiry. Five autistic students (three male and two female), studying at KU Leuven, a university located in Flanders, Belgium, who did not know each other, participated in the research. We refer to them as user/experts, a term Elaine Ostroff introduced to identify individuals whose personal experiences give them a unique critical capacity to evaluate environments.[45] Throughout the study, participants determined – and, when possible, guided – the topics considered. This approach provided them with the opportunity to elucidate their experiences, motivating them to discuss topics they deemed important and allowing for the inclusion of emotional and personal characteristics, as well as lived experiences, into the analysis.[46] The approach also facilitated a better understanding of their unique perspectives.

Participants were aged between nineteen and twenty-four at the time of the study and had diverse profiles concerning gender, co-occurring conditions, religion, and field of study (see Table 1). While our research focuses on autistic students, we recognise that autism often co-occurs with other neurodivergent conditions.[47] Moreover, given that autism encompasses a spectrum of varieties, autistic individuals may have different experiences, preferences,[48] strengths, and weaknesses.[49] Our analysis, therefore, takes into account these possible co-occurring conditions and distinguishes itself from studies that focus on the generalised classification of autism, often overlooking the diversity within the autism spectrum and autistic people's individual preferences.[50] By engaging with specific user/experts, we aimed to gain profound insights into their personal experiences and needs from various perspectives and individual standpoints.

Before obtaining the participants' consent, Ruben Bamps (the first author) provided them with information about the research setup, their role in the research, and the methods he proposed to use. After reading an additional form describing the study's ethical and confidentiality provisions, as approved by the Social and Societal Ethics Committee of KU Leuven (G-2020-1555-R2(MIN)), all five gave written consent. To protect confidentiality, we replaced their names with pseudonymous.

Each participant attended three different meetings during which Ruben conducted semi-structured interviews. While the participants had the option to bring a peer (family member, close friend, etc.), none of them opted to do so. In the initial, relatively informal meeting, Ruben clarified the research set-up and the schedule for upcoming meetings. This was followed by a discussion about the participants' overall college experience and daily life. The purpose of this meeting was to get acquainted and build rapport. Like others, people on the spectrum have different preferences, making it challenging to determine their preferred meeting environment.[51] Therefore, Ruben invited participants to choose the meeting location, enhancing their comfort and offering an opportunity to discuss why they chose that specific space. Rather than in enclosed campus spaces (e.g. an empty auditorium or seminar room), four out of five participants preferred meeting at a cafe in the afternoon, conveying a sense of comfort in this setting. On average, this meeting lasted approximately 1.5 hours per participant.

At the end of the first meeting, Ruben asked participants to prepare for the photovoice interview in the second meeting. In a photovoice interview, photographs taken by the interviewee guide the conversation. This method allows exchanging

Pseudonym	Adrian	Aisha	Celine	Mark	Warre
					
Age (years)	19	19	24	24	24
Study (year)	Bachelor in Engineering Science (2nd)	Bachelor in Business Administration (1st)	Bachelor in Japanese Studies (2nd)	PhD in Engineering Science (1st)	Master in Informatics (last)
Diagnosis	Autism – ADHD – Dysgraphia	Autism – ADHD	Autism	Autism – ADHD	Autism
Diagnosed (age in years)	2nd year of Primary school (9)	End of 1st year of University (19)	During fourth year of High school (16)	End of 1st year of University (19)	End of 4th year of University (21)
Other	/	Muslim	Was depressed	Colorblind	Convinced he has ADHD

Table 1: **Participants' profiles**

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information in a non-verbal way, fostering social interaction during and adding depth to the interview.[52] Furthermore, it gives participants the possibility to reflect on what they would like to prioritise in the research.[53] For our study, Ruben asked participants to provide three to five photographs of spaces where they feel comfortable and three to five photographs of spaces where they feel uncomfortable. Because some autistic individuals prefer writing their thoughts down instead of expressing them orally, Ruben offered them a template they could follow if they wished.[54] Alongside the photos, participants had the opportunity to write comments about spaces, which could aid in guiding the interview.

During the second meeting, which lasted 1.5 to 2 hours per participant, Ruben aimed to understand the participants' college experiences and how they could be improved. Initially, participants shared the photographs that they had prepared and which served as a reference to elucidate their experiences. One participant did not provide any comments next to his photographs, preferring to discuss them orally, possibly related to his dysgraphia. Additionally, two participants encountered difficulty identifying multiple spaces or spatial concepts, suggesting that the assignment's formulation was not entirely clear. After participants described the photographs, Ruben discussed potential improvements with them. The conversation took the form of a co-design exercise led by the participants. However, Ruben observed challenges in motivating participants to come up with suggestions. Three participants found it challenging to envision improvements for uncomfortable spaces they had photographed, with one describing a trauma that led him to avoid certain spaces rather than seeking improvements.

During these meetings, Ruben audio-recorded the conversations and made notes and sketches as needed. After each meeting, he transcribed the recordings to allow for an in-depth analysis of the discussed spaces and topics.

To analyse the transcripts and photographs, Ruben adopted an inductive approach to thematic analysis. Following the transcription of the interviews, he compared different spaces, spatial elements, and principles to identify similarities and differences among participants' experiences. Rather than applying predefined codes, he analysed the material by identifying and developing recurring themes based on the content of participants' narratives. Initial groupings were based on spatial characteristics (e.g. classrooms, hallways), the activities these spaces served (e.g. studying, socialising, retreating), and how participants experienced them (e.g. clarity, distraction, comfort, avoidance). These dimensions helped structure the recurring themes, which he summarised in a presentation and illustrated with corresponding photographs.

The third meeting aimed to clarify statements made during the second meeting, to discuss the themes identified by then through the thematic analysis, and to gather participants' opinions on topics mentioned by others, which supported the comparison of experiences and opinions. Ruben's presentation facilitated the discussion and, if necessary, he asked questions to clarify unclear elements from the previous stage. The meeting lasted around one hour per participant. Following these meetings, Ruben refined the analysis, created schemes for an overview, and categorised different spaces based on their function and related perspectives.

College life on the autism spectrum

Analysing the material collected during meetings with five students on the autism spectrum provides insight into their experiences and the challenges they face. Central in their experiences are *study*, *sociality*, and *retreat*. However, it is essential to note that these may not necessarily generalise to every autistic student. Other autistic students could have different experiences during their college years.

Study encompasses everything related to attending lectures, studying the curriculum, and ultimately passing exams. Three out of five participants expressed difficulty in correctly interpreting exam questions. Additionally, participants faced challenges related to group work, causing increased stress due to heightened social interactions and coworkers' lack of punctuality.

Sociality covers students' social activities during their college years. While college life provides time and opportunities for leisure activities, participants could experience social exhaustion leading to tiredness and discomfort. As a coping mechanism, they preferred one-on-one encounters to group interactions. As Warre explained, 'Switch between lectures is not recovery. The most exhausting is not being in the lecture but being social with everyone for a whole day.' These transitions, although intended as breaks, did not help them recharge, but instead contributed to fatigue and social overload.

Retreat revolves around the participants' need to escape from overwhelming situations. In such instances, they desire to retreat to familiar places, such as their student accommodation or parental home, which serve as safe spaces to find rest and recharge their 'social battery'. On campus, participants actively seek retreat spaces, such as areas under staircases, empty rooms, or even under a bicycle tunnel that offers less sensory stimulation.

Clarity, distraction, and escape

In the participants' experiences, the built environment plays a role in so far that it affects *clarity*, *distraction*, and *escape*. *Clarity* refers to the difficulties participants reported due to unclear circulation and signage. For example, Adrian described a complex road crossing: 'What do you have to do with your bike? I don't know and that's a problem.' Similarly, the signage in university buildings was confusing for participants: 'A lot of buildings have signs [with directions] to a specific room. Five rooms are listed but I don't want that. I want to understand the building [I want a] more clear indication of what I have to do.' In addition, three out of five participants

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1 **Unclear signage fire door.**

mentioned having difficulty finding classrooms due to lack of (clear) signage. Adrian struggled to understand the signage on fire doors in university buildings. Many doors display the dubious caption: 'Fireproof door keep it closed, please!' *[1]*, implying the door must not be opened, even if it is the only route to a destination. This led to frustrations and uncertainty on how to handle the situation. To improve clarity, participants proposed strategically positioning fire escape plans near staircases.

While clear signage is crucial, clear circulation is equally important. Participants expressed challenges in understanding where to walk in wide hallways. Preferences varied, with some favouring narrow hallways to control interactions and others desiring wider paths to avoid feeling crowded. Some participants prefer to know what is behind a door. They suggest using doors with a small window between hallways and fully opaque doors between hallways and seminar rooms. This convention would allow distinguishing between doors that lead to other hallways and those that lead to classrooms.

Apart from lack of clarity, participants mentioned several *distractions* related to the built environment. Their experiences revealed both similarities and differences, particularly in sensitivity to light and noise. For example, Adrian often wears sunglasses inside, while others do not. Warre noted, 'No one likes sun in their eyes, but when you really can't ignore it for hours, it's really bad.' All participants were distracted by certain noises and experienced difficulty filtering background noise during lectures and exams. When asked about the possibility of using a headset to filter environmental sounds, Warre responded, 'Oh that would be fantastic. If I didn't have to hear the sound behind me or in front of me […] It would be a game changer for my studies.' Notably, noises that persistently changed were more challenging to filter than those that remained constant.

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2a



2b

2 Escape spaces: (a) space under stairs; (b) space next to hallway; (c) bicycle tunnel close to campus.

Distractions also depend on the type of space and the situation. Certain objects, like plants, may help eliminate other stimuli, providing a sense of comfort in a hallway; however, in a classroom, the same objects could become a source of distraction, making it difficult to focus on the lecture and causing frustrations. The level of distraction also depends on the concentration required. Participants drew a clear distinction between leisure activities (e.g. sports, students' association events) and lectures or exams. While there were generally fewer distractions during the latter, each distraction had more impact on their focus.

Additionally, participants expressed a desire to exert control over spaces and manage distractions within them by adjusting sensory aspects like lighting, temperature, and curtains. Yet even when they had control over a space, the room's interior design could impact the distractions and, consequently, the chaos the participants experienced. Some participants reported increased chaos in spaces where interior walls were finished with bricks instead of plaster, or where multiple material finishes are used. Furthermore, their experience of chaos varied depending on the situation, particularly whether a situation is predictable or not. Predictability, providing structure and clarity, had a calming effect on their senses; for example, they found familiar buildings to be less stimulating than unfamiliar ones.

Finally, *escape* highlights the importance of escape or safe spaces for participants.



2c

As mentioned, when situations became overwhelming, they withdrew to their student residence to fully disconnect, as being on campus made it difficult to avoid distractions. Since no dedicated no-stimulus spaces exist on the KU Leuven campus, participants sought out subtler spaces, such as areas that are out of sight, under a staircase, or near a hallway *[*2a and 2b*]*, to reduce sensory input. Adrian even took a picture of a bicycle tunnel close to campus *[*2c*]*, explaining:

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3a



3c



3b

3 (a) Black room; (b) mirror room; (c) staircase.

This is a bicycle tunnel, very indirect light, just from outside. I think it's really calm here. I think this is a very pleasant place, also to be. There's a bicycle path next to it, so people on bikes pass, but you can stand on the side and there's no real crowd.

When already overstimulated, however, these spaces failed to calm them. As Warre noted:

Underneath a staircase you have more footfall [compared to a real separated space] but on the moments when less people are passing, it could be calm. However, when you need it the most, it will help the less.

In this context, participants expressed a desire for escape spaces integrated within the building design, such as meeting rooms for video calls, indicating the importance of social acceptance.

Leveraging students' experiences

The final phase of our study involved implementing the insights gained. For this purpose, Ruben invited Existenz, the organisation of architectural engineering students at KU Leuven, to make the venue of their yearly Existenzweek more autism-friendly based on the research findings. Throughout this weeklong event, the organisation revitalises a previously abandoned location in Leuven. During this week, students can visit the location to enjoy art, music, and architecture, while the organisation provides various activities and introduces interventions related to relevant contemporary topics (e.g. sustainability, renovation, or inclusive design).

Initially, Ruben shared the research findings with members of the Existenz student association through a presentation. The presentation started by outlining the perspectives of the participating autistic students, emphasising their unique way of experiencing the world. As an example, Ruben highlighted the potential ambiguity of the caption on fire doors, as explained earlier. He stressed the importance of providing logical and clear signage

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and elucidated the diversity of people on the autism spectrum, noting that participants were stimulated or distracted in different ways – some by noise, others by touch, and others by sight visually. The presentation concluded by addressing the misconception that people on the autism spectrum are antisocial, clarifying that they seek to avoid distractions and chaos, often found in crowded settings. Smaller groups reduce sensory input and increase controllability.

Following this overview, Ruben suggested specific interventions to improve their events. His first suggestion included dimming lights, avoiding direct lights, and eliminating lights that could point directly to people. To create a more pleasant environment, he recommended simple adjustments, such as covering or redirecting light sources. Secondly, he proposed to provide an escape space, not necessarily soundproof but designed for tranquillity. By way of retreat for overwhelming situations, he suggested a quiet exposition or waiting room.

Several weeks later, Ruben and the participating autistic students attended the Existenzweek. The entrance included a scale model of the venue and a poster with a plan. In addition, a blackboard near the entrance displayed an overview of various activities and the menu. The central space was decorated with plants, carpets, and cushions.

Despite it being relatively crowded, the participants generally appreciated the coziness, except for Warre, who found the scent of the plants distracting. The Existenz team had designed the 'Black room' *[3a]* to stimulate senses with chaotic music, flickering lights, and empty wine bottles on a table. While Warre felt overwhelmed by the flickering lights and quickly left, Adrian enjoyed the darkness and remained unfazed by the flickering lights; he did not even notice that they were flickering. The participants unanimously recognised a good escape space in the 'Mirror room' *[3b]*, which offered a quiet atmosphere and a pleasant view outside. Finally, the 'Staircase' *[3c]* was decorated with glow-in-the-dark paint to create a visually appealing space. While Mark and Warre passed through without specific comments, Adrian appreciated the area underneath the staircase, seeing it as a potential retreat space with visual cover and minimal disturbance.

Not a matter of cause-and-effect

Our findings align with those of several scholars who recognise study and sociality as characteristic of college life.[55] Compared to these studies about college life in general, a significant difference in our study is the emphasis on autistic students' need for retreat spaces on campus. The participants developed strategies to seek such spaces mostly by returning to their student accommodation. This aligns with Tackx' study[56] on the importance for autistic students to find rest in student housing and with a study at Dublin university where sensory pods enable students to retreat.[57] However, the participants in our study would hesitate to use a distinctive space like a sensory pod, possibly because of the potential stigma. This identified need for retreat aligns with other studies on the built environment's role in autistic people's experiences in other contexts.[58] Therefore our findings highlight the importance of integrating retreat spaces in the built environment using existing spaces, avoiding stigma, and enhancing social acceptance.

Furthermore, our findings show how the university as built environment affects the wellbeing of autistic students: by facilitating wayfinding and reducing stress through clarity, reducing distractions, and providing predictability in various ways (e.g. clear plans or indirect lights) and at different scales (e.g. room as well as building level). Other scholars have stressed the need for clarity,[59] reducing distractions,[60] and escape spaces[61] as well. The implementation of the findings at a student organisation's event suggests that small interventions in the built environment could already make a difference for autistic students.

Importantly, we have found that their experiences depend on situations and locations. This suggests that the impact of the built environment and its spatial and sensory qualities on autistic individuals is not a matter of cause-and-effect. Their experiences are complex and influenced by multiple factors, such as the context and type of space. This aligns with findings of other scholars, who observed that different types of spaces affect autistic people differently.[62] Specifically, predictability and having control over the built environment were important for the participating autistic students to reduce stress and improve their comfort. Other scholars also mention that the predictability of material elements in the built environment is important for autistic people.[63]

Moreover, within the same environment, context, and moment, autistic participants had different experiences. For example, some left the Existenz event quickly, whereas others enjoyed the spaces. While one participant could not tolerate flickering lights, another did not even notice that they were flickering. This illustrates that autistic students' experiences may be very diverse. By consequence, the implementation of design guidelines for autism should take into account this diversity.[64]

Alongside its substantive contributions, our study also yielded methodological insights. First, having disclosed their autism condition seems to have positive effects on talking about an individual's experiences. The autistic participants felt comfortable discussing their experiences as they understand their own needs as being autistic. Providing opportunities for them to decide where to go and what to talk about increased their engagement. Second, as we intended to involve autistic students with different profiles, Ruben's experiences when interacting with participants were very diverse. For instance, while multiple meetings with participants throughout the study facilitated engagement and conversation about their experiences, some students seemed to be more passive when sharing their experiences than others. Future research should be mindful of

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these differences. For example, preparing multiple methods for gathering material would allow participants to choose the method that suits them better. Although some participants had difficulties in finding spaces and sharing their experiences, we believe that the photovoice method facilitated conversation and encouraged students to share their experiences. Therefore, we recommend researchers use sensory methods, such as photovoice, in autism research to gain insight into their first-person perspectives, which are currently underexamined in research on autism and the built environment.[65] Third, participants expressed the need for more research related to their daily life challenges, such as wayfinding in buildings, and to put the insights gained into practice. As far as the latter is concerned, we learned that participants creatively use and appropriate the built environment (e.g. spaces under a staircase, or a bicycle tunnel close to campus). At the same time, participants hesitated to suggest improvements for spaces they experienced as uncomfortable. The latter aligns with observations that user/experts are particularly good at pointing out what designers should take into account and may prefer leaving the actual design up to them.[66] In this connection, it may be valuable to explore alternative approaches, like discussing a variety of preprepared design alternatives.

Finally, the one-year timeframe of our study allowed involving five autistic participants, who cannot be considered representative of all autistic students. A common misunderstanding about such studies, Bent Flyvbjerg points out, is that they cannot contribute to scientific development, as one cannot generalise on the basis of a single case or small number of cases.[67] However, when comparing participants' experiences, we can recognise similarities as well as differences. Moreover, Flyvbjerg argues, the multiple wealth of details of such studies with regard to their closeness to real-life situations allows developing a more nuanced view of reality. To further enrich this view, we envision a longer timeframe and a more diverse set of participants.

Making a difference

In this study, we examined how five autistic students experience college life at KU Leuven, focusing on the role of the university's built environment therein. The participating students selected topics they wished to discuss, which we then compared, focusing on differences and similarities. To guide the participants to determine these topics, they were asked to take pictures of spaces where they felt comfortable or uncomfortable. These examples allowed discussing how they experience college life and aspects of the built environment that are critical (to them).

We learned that their experiences are different and more challenging than college life in general, emphasising the explicit need to retreat. The built environment plays an important role in improving and easing their college life by providing opportunities to withdraw. Integrating these into existing spaces in university settings may enhance social acceptance, whereas organising them separately might increase stigma around autism. Predictability and having control are crucial to ease stress and improve comfort. They result from enhancing the clarity of the building, e.g. with clear signage, reducing distractions, and providing escape spaces in different forms. Rather than a matter of cause-and-effect, however, the participants' experiences were very diverse and different from each other, depending on situations and locations. We also show how, despite this complexity, small interventions in the built environment can make a difference.

For future research, we encourage more studies addressing the difficulties and real-life challenges of autistic students and putting the insights gained into practice. Given the diversity on the autism spectrum, we also propose different ways to involve autistic individuals in studies about and with them.

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Competing interests
The authors declare none.

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