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Research paper

Exploring the facilitators and barriers to shopping mall use by persons with disabilities and strategies for improvements: Perspectives from persons with disabilities, rehabilitation professionals and shopkeepers☆

Explorer les facilitateurs, les barrières et améliorations possibles pour la fréquentation des centres commerciaux par les personnes handicapées : le point de vue des personnes handicapées, des professionnels de la réadaptation et des commerçants

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☆ The study presented in this article – like the others in this special issue *Le centre commercial : un laboratoire vivant/Mall as Living Lab* – is part of the larger "CRIR-Living Lab Vivant" project described in the introduction to the issue: Desjardins M., Ville I., Mazurik K. (2014) On theoretical and methodological constructs of obstacles to social participation: The CRIR-Living Lab Vivant project. Alter, *European Journal of Disability Research*, 8 (3).

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ABSTRACT

Persons with disabilities face challenges which impact on their ability to accomplish daily activities such as moving around, communicating and fulfilling social roles. Social participation assumes individuals with disabilities live within their community and interact with others. Shopping malls are public spaces used by individuals for various reasons. Here, all components of the social and physical environment interact and have an impact on social participation. This exploratory and qualitative study provides a multi-perspective assessment of the usability, as well as of the environmental facilitators and obstacles to social participation in shopping malls. The results also suggest necessary improvements. We interviewed 15 persons with disabilities, 15 rehabilitation professionals and 9 shopkeepers. Participants viewed the mall as a multifunctional place for everyday use, but at times, also as a limiting place. Multiple facilitators and obstacles were identified; the most important were interaction with shopkeepers and the mall's design for mobility or wayfinding. All participants agreed shopkeeper training and an improved awareness of the needs of persons with disabilities would be beneficial. Multiple stakeholders' perceptions provide a basis for further investigation about needed changes and their potential for making malls more welcoming and inclusive to all.

Mots clés :
Participation
Shopping
Facteurs environnementaux
CIF
Handicap
Méthodes qualitatives

RÉSUMÉ

Les personnes handicapées rencontrent des défis dans la réalisation de leurs activités quotidiennes comme les déplacements ou la communication, et de leurs rôles sociaux. La participation sociale suppose que les personnes handicapées interagissent et vivent au sein de leur communauté. Les centres commerciaux sont des espaces publics utilisés par divers groupes, pour différentes raisons, où les composantes de l'environnement social et physique interagissent influençant la participation sociale des personnes handicapées. Cette étude qualitative exploratoire décrit, selon une perspective pluraliste, les usages, les facilitateurs et les obstacles environnementaux à la participation dans les centres commerciaux ainsi que les améliorations possibles. Nous avons rencontré 15 personnes handicapées, 15 professionnels en réadaptation et 9 commerçants. Les participants ont rapporté que le centre commercial était un lieu multifonctionnel au quotidien, mais aussi parfois restreignant. Plusieurs facilitateurs et obstacles ont été identifiés, notamment l'importance des interactions avec les commerçants, et des aménagements pour les déplacements et l'orientation. Tous les participants ont mentionné le besoin de formation des commerçants et de sensibilisation aux besoins des personnes handicapées. Le pluralisme des points de vue fournit une base pour l'étude plus approfondie des changements à apporter et de leur potentiel pour créer des centres commerciaux plus accueillant et inclusif pour tous.

1. Introduction

Many persons with disabilities face daily challenges that hinder social participation and prevent them from accomplishing common daily activities such as feeding themselves, moving around, communicating and fulfilling social roles (i.e., work, leisure). Social participation assumes individuals with disabilities live and interact with their family and their community, but sometimes this is not always possible. Adaptations within the physical and social environment are necessary to facilitate social participation and inclusion of individuals with disabilities. However, the design of buildings and public spaces tends to focus on the 'average' person which may conflict with the reality of the diversity inherent in actual users, who tend to have a much wider range of abilities, body shapes and sizes and, thus create environments that are not inclusive for all (Afacan, 2012).

Universal design (UD) has been embedded as a principle in accessibility regulations in North American building design codes. However, many public environments fall short of this principle. The general principle of UD is that products and services should be usable by as many people as possible, regardless of disability, language barriers, or other obstacles (Mace, 1997). Environments adopting UD principles have been reported as promoting equal status contact, allowing persons with and without disabilities to fully participate in common, shared environments, facilitating the interaction between all people (Mace, 1997). UD is thought to be aligned with a universal understanding of the disablement process such as the one espoused by the World Health Organization (Gossett, Mirza, Barnds, & Feidt, 2009). UD does not however, directly address all of the social and human aspects of ease of movement in diverse settings, as it tends to focus mainly on aspects of the physical environment (Imrie, 2012). Persons with disabilities may also face social obstacles that are behavioral and/or communicative in nature or related to beliefs about a person's ability to function, influencing the way he or she is treated. There is still a need to examine and understand how the environment, both physical and social, is experienced and can be improved.

Here we report on a study examining issues related to optimizing social participation and inclusion of persons with disabilities within shopping malls. Shopping is an important activity for all, and El Hedhli and colleagues (2013) argue it can contribute significantly to a person's satisfaction in important life domains (consumer, social, leisure, and community life). Shopping malls are places where diverse groups of individuals across the life span participate in various activities; there is a dynamic relationship between all components of the social and physical environments, directly impacting on meaningful participation. Recent papers have focused on the shopping experiences of people without disabilities (e.g., El Hedhli, Chebat, & Sirgy, 2013; Gilboa & Vilnai-Yavetz, 2013; Singh & Sahay, 2012), but very few have examined the experience of persons with disabilities (Baker, Stephens, & Hill, 2002; Goodrich & Ramsey, 2012; McClain, 2000). Yet, persons with disabilities, like other people, want good customer service and want to have a positive experience while shopping.

The objectives of this exploratory study were to provide a multi-perspective assessment of the uses of shopping malls for individuals with various disabilities and to identify the perceived obstacles and facilitators of the shopping mall environment (physical and social). Finally, we investigated the perceptions about how the environment of malls can be improved to include all individuals, including those with disabilities.

2. Method

2.1. Participants

To obtain a multi-perspective of the shopping mall experience of people with disabilities, we interviewed individuals from three stakeholder groups: persons with disabilities, rehabilitation professionals and shopkeepers. Participants with disabilities and professionals were recruited on a voluntary basis through the six rehabilitation member institutions of the Centre for Interdisciplinary Research in Rehabilitation of Greater Montreal. Clinical research coordinators from each institution contacted professionals and clients and transmitted contact details of potential participants to the research assistant (RA). The RA then contacted eligible participants to describe the study objectives and procedures. The only inclusion criterion included was being an adult able to understand French

Table 1
Description of participants from the three stakeholder groups.

Variables	Persons with disabilities ($n=15$)	Rehabilitation professionals ($n=15$)	Shopkeepers ($n=9$)
Men	6	2	4
Age (years)			
18–35	6	–	6
36–49	4	–	3
50–64	3	–	–
65–74	2	–	–
Level of education			
Less than High school	2	–	–
High school	1	–	2
College/Professional/technical school	4	–	5
University	7	–	2
Type of disability[a]			
Motor impairment	7	–	–
Neurological impairment	4	–	–
Visual impairment	6	–	–
Hearing impairment	2	–	–
Type of technical aids or assistance to visit the mall		–	–
Cochlear implant	2	–	
White cane, guide dog	3		–
Cane, crutches	2	–	–
Manual wheelchair	2	–	–
Electric wheelchair/scooter	5	–	–
Human	7	–	–
Occupation	–	Recreation tech. (1) COMS[b] (4) OT, PT[c] (4) Special educator (4) Audiologist (2) Social Worker	Administrator (1) Shop owner (1) Manager (6) Sales clerk (1)
Using shopping mall in their clinical practice	–	10	–
Mean years of experience in retail	–	–	9.2
Mean familiarity with challenges faced by PWDs (scored 1–10) (range)	–	–	4.8 (2–7)

[a] Some participants with disabilities had more than one impairments.
[b] Certified Orientation and Mobility Specialist.
[c] Occupational therapist, Physiotherapist.

or English. For the recruitment of the shopkeepers, the mall's general manager established a list of mall tenants potentially interested in participating in the study; these individuals were subsequently contacted by phone by the RA. Our convenience sample was thus composed of 15 persons with disabilities, 15 rehabilitation professionals and nine shopkeepers. Table 1 presents the characteristics of the participants in each stakeholder group.

The majority of participants living with disabilities were women, aged 18 to 74 years old. They had various impairments (and diagnoses): motor (e.g., spinal cord injury, muscular dystrophy, severe orthopedic injuries), neurological (e.g., cerebral palsy, head injury) visual (e.g., retinitis pigmentosa, septo-optic dysplasia) and hearing (e.g. Norrie syndrome, deafness since birth). Half needed technical aids to communicate and the majority (13/15) required technical aids for mobility. The rehabilitation professionals were from multiple disciplines and worked with various types of clientele (children, adult and the elderly) having diverse limitations (motor, neurological, visual, hearing) and many (10/15) reported using shopping malls in their clinical practice. The shopkeepers included a mall administrator, a storeowner, managers and sales clerks with between one to 17 years of experience. Most of them were unfamiliar with the challenges faced by persons with disabilities. Only three of the stores they worked in used guidelines for customer services or for the store's design for people with disabilities.

2.2. Procedure

2.2.1. Study design

We used a qualitative methodology because of the exploratory nature of this study. Qualitative research allows a deeper and richer understanding of a topic and is recommended for studying minority groups or people with disabilities because of its usefulness and relevancy to describe and clarify the interdependence of human interaction, cultural attitudes, and social dimension of the environment (O'Day & Kileen, 2002).

2.2.2. Data collection

An RA interviewed individually each person with a disability at the time and place of his/her choice (e.g., home or mall). Interviews were semi-structured and explored, through open-ended questions, what shopping malls meant for them and the activities they enjoyed or had difficulty doing in that setting. They were also asked about their perceptions of facilitators and obstacles in shopping malls. The interview also addressed ways to improve malls to better fit the needs of persons with disabilities and to make them more welcoming. To gather perceptions of the rehabilitation professionals, we conducted two focus groups based on our previous experience with groups of clinicians and for logistic reasons: one involved seven, and the other, eight professionals. Professionals were invited to discuss what they thought shopping malls meant to their clients (i.e., persons with disabilities), how they thought their clients used malls, and obstacles and facilitators in shopping malls. Shopkeepers were met individually by the RA at their store or near their workplace. These semi-structured interviews addressed shopkeepers' perceptions about the meaning of malls for persons with disabilities and issues of accessibility. Shopkeepers were also questioned about doing business and interacting with individuals with disabilities as well as about how to improve the shopping experience of people with disabilities.

2.2.3. Data analysis

With the participants' permission, all interviews and focus groups were recorded and transcribed verbatim. The transcriptions were then coded using NVivo software. The thematic content analysis began with coding all ideas expressed in the participants' discourse (for half of the participants). A second RA reviewed and validated the labeling of the themes/codes. Suggestions were made about the concepts underlying the codes. Once consensus was reached, the remaining half of the transcriptions was coded. The co-principal researchers subsequently reviewed all codes and a co-investigator validated the coding. In line with the aim of the study, the thematic codes were arranged under two principal headings: use (ease or difficulty) of shopping malls, and environmental factors (physical and social) therein. Under the heading environmental factors we included perceived facilitators, barriers and recommended improvements.

Finally, the results were grouped according to the International Classification of Functioning, Disability and Health (ICF) developed by the World Health Organization since it "provides a unified and standard language and framework for the description of health and health- related states" (WHO, 2001), and as such, enables sharing study results using a common language. The model, including more than 1400 categories of classification, has two parts. The first part is composed of functioning and disability which is further broken down into body functions and structures, and activities and participation. The second part covers contextual factors including environmental and personal factors. The activities and participation cover the full range of life areas, from basic ones such as walking or talking, to areas more complex such as interpersonal interaction or employment. Environmental factors consist of the physical, social and attitudinal environments in which people live and conduct their lives. Indeed other models exist (e.g. the Human Development Model - Disability Creation Process (Fougeyrollas et al., 1998)) but, as reported by Mortensen and colleagues (2008), many do not include all of the ICF activity and participation domains or may not fully capture the entire scope of the concept of participation as well as the ICF. Thus, in our opinion, the ICF appeared to best categorize our participants' discourse. Moreover, the ICF was recently shown to adequately analyze and report qualitative data relating to environmental factors (Randström, Asplund, & Svedlund, 2012). In the present study, we followed the 10 rules of ICF coding

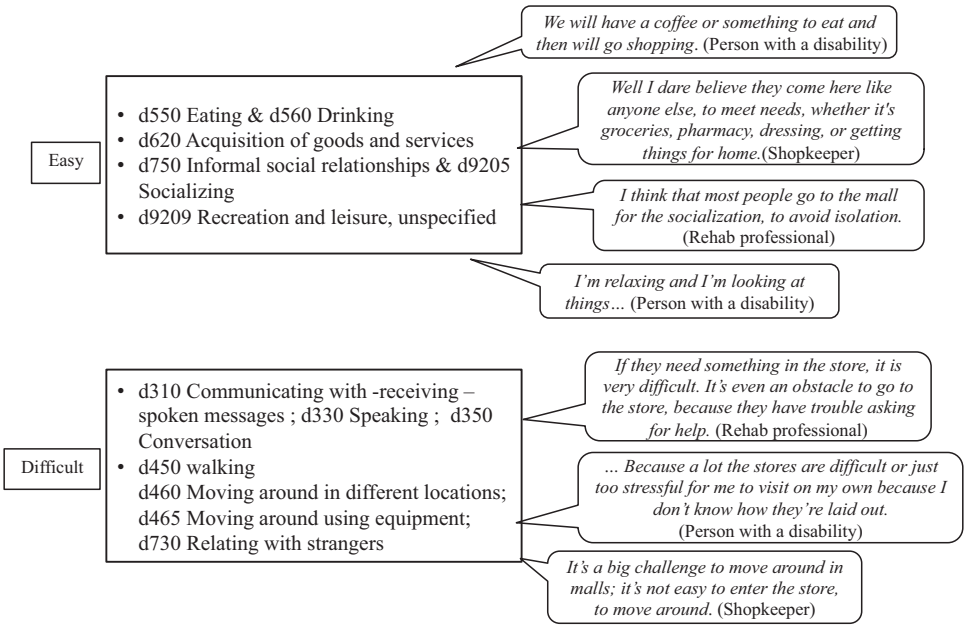

Fig. 1. Easy and difficult uses of shopping malls as reported by stakeholder groups.

(Cieza, Brockow, Ewert, Amman, Kollerits, Chatterji, . . . & Stucki, 2002). The "Activity" and "Participation" categories were used to report usability of the mall and the "environmental factors" category to report the facilitators, barriers and improvements.

3. Results

Participants appreciated having the opportunity to share their perceptions about shopping mall uses and how they can be improved. On average, the duration of the interviews and the focus groups was 40 and 180 minutes, respectively. We report here only themes mentioned at least 15 times by participants in the three groups (i.e., representing about 10% of the data). In the context of this exploratory study, we wanted to present the richness of the points of view expressed by the participants but felt it was not appropriate to present themes mentioned only once or twice. The results for the three groups are combined in most cases (and presented using ICF codes in brackets), unless specified that a particular point was brought up only by one or two of the stakeholder groups. We did not distinguish the comments according to disability type since not all of the participants' comments were specifically related to their disability. Rather, participants spoke about general facilitators and obstacles that could affect all persons. We first present the uses of the shopping malls then the environmental factors, starting with the physical environment and then the social environment.

3.1. Use of shopping malls

Participants identified four activities considered easy to do and two which could be difficult. Fig. 1 presents the ICF categories related to these uses as well as excerpts of the participants' verbatim. Socialization, including *informal social relationships* (ICF code d750) and *socializing* (d9205), was the only use reported by participants from all three groups. Participants with disabilities and shopkeepers considered it was easy for persons with disabilities to use the mall for the *acquisition of goods and services* (d620). Respondents with disabilities added they felt it was easy for them to go to a mall for entertainment and to relax (*recreation and leisure*, unspecified, d9209) or to enjoy a coffee or to eat

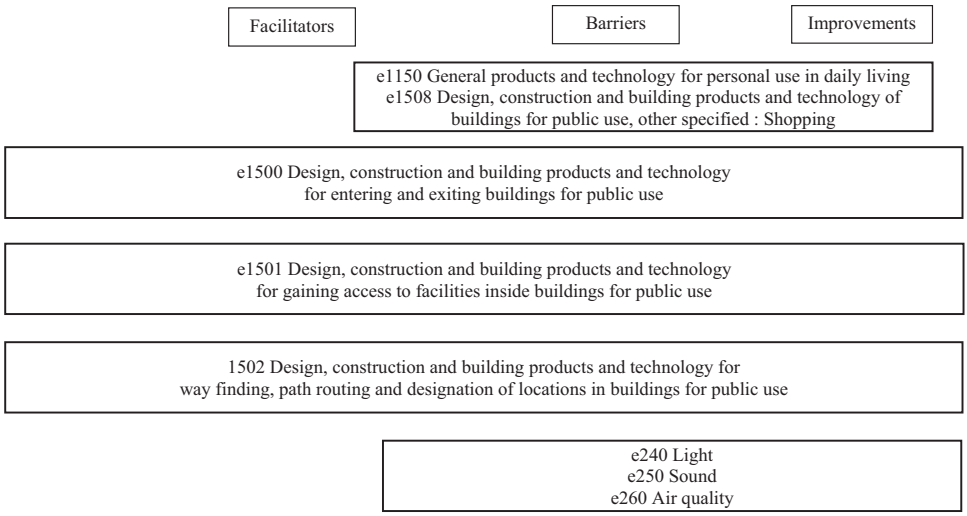

Fig. 2. Perceptions about physical environment factors (facilitators, barriers or improvements) in shopping malls.

(*drinking*, d560; *eating*, d550). Shopkeepers and rehabilitation professionals thought shopping malls were used by persons with disabilities the same way as by the general public.

Respondents with disabilities and shopkeepers reported moving around a mall is sometimes difficult for people with disabilities: *walking* (d450), *moving around in different locations, especially within buildings other than home* (d4601), and *moving around using equipment* (d465). Moreover, participants with disabilities reported they often needed to be accompanied in malls, yet not necessarily when in other environments. According to the rehabilitation professionals, communication can be limited or difficult to accomplish in shopping malls by people with disabilities: *communicating with - receiving - spoken messages* (d310), *speaking* (d330), *conversation* (d350) and *relating with strangers* (d730).

3.2. Environmental factors

Respondents identified different characteristics of the physical and social environments facilitating or hindering the use of shopping malls, as well as aspects needing improvement for increased social participation of persons with disabilities. These are presented in Figs. 2 and 3 as facilitators, barriers or improvements (or a combination thereof) with their associated ICF codes.

3.2.1. Physical environment

Five factors relating to the physical environment emerged from the participants' discourse as particularly influential in their use and experiences with malls (Fig. 2).

3.2.1.1. General products and technology for personal use in daily living (e1150) and Design, construction and building products and technology of buildings for public use, other specified: shopping activities (e1508). Elements related to this factor were identified as barriers and as improvements (as illustrated by the text box aligned only under these two headings in Fig. 2). Several obstacles for shopping were identified by all groups including non-adaptive furniture and equipment in stores, and particularly poorly designed fitting rooms, cash registers and payment devices. Participants with disabilities and rehabilitation professionnals suggested making them more accessible by enlarging fitting rooms, using removable digital payment terminals, and lowering checkout counters. Respondents with disabilities also said products should be more easily reached, and prices placed where they can easily be seen.

"They could keep our needs in mind by having reserved cashiers for us or adapted cashes at stores where there are not as many people. To sign something or pass a credit card, adjustable counter heights for people in different sized wheelchairs would be helpful." (Respondent with disability)

3.2.1.2. Design, construction and building products and technology for entering and exiting buildings for public use (e1500). The main facilitator identified by respondents in all three groups related to malls' location. This ICF code was also reported as being an obstacle and an improvement. For example, it is easier to go to a mall when centrally located in a city or linked to a transportation system. Inadequate access ramps or an insufficient number of ramps were barriers reported by all groups. Participants with disabilities mentioned automatic doors often do not work well and there are too few of them. Regarding improvements, several suggestions were made but there was no recurrent theme.

"The problem is the lack of ramps, there are stairs at most exits. I have seen people with strollers; they had to be two to get in. . . So it's for everyone." (Shopkeeper)

3.2.1.3. Design, construction and building products and technology for gaining access to facilities inside buildings for public use (e1501). Facilities in the mall include elevators, stairs, restrooms, food courts and customer service kiosks. Participants with disabilities and shopkeepers identified several related facilitators, but there was no recurrent theme. Participants in the three groups mentioned poorly designed elevators (i.e., not adapted or poorly located) as a barrier to mall use. Participants with disabilities and shopkeepers reported problems with too many stairs and escalators that often change direction, even in the same week. The lack of access to and within restrooms was also an obstacle for respondents with disabilities and rehabilitation professionals: they are often too small or do not have automatic doors.

"Let's talks about the toilet! They are often located at the far end of a hallway. It's cramped, it's not sure that someone with a wheelchair can really get in. There's not always a raised toilet seat or a support bar. The sink is not at the right height. . ." (Rehabilitation professional)

Many suggestions to improve the facilities in shopping malls were given by all participants. These included making elevators more accessible, locating them more centrally and increasing their number. For food courts, participants from all groups suggested a wheelchair accessible area and adapted menus. Customer service kiosks could be improved by providing an equipment rental service, including technical aids (e.g., wheelchairs, personal frequency modulation (FM) systems for people with hearing loss), and a service to accompany persons with disabilities to shop (this service could be provided by volunteers having disabilities themselves). To improve washroom access, participants with disabilities and rehabilitation professionals proposed making the space larger and locating them more centrally.

"I think they should have the elevators somewhere where it's easily seen. And also to have Braille on the elevators for people with visual impairments or voice activation to let people know what floor they are on." (Respondent with disability)

"There should be a designated person in the mall who people with disabilities can call and say: I'm coming to shop, can I have someone to help me?" (Shopkeeper)

3.2.1.4. Design, construction and building products and technology for way finding, path routing and designation of locations in buildings for public use (e1502). This was the most mentioned of the physical environmental factors reported by the three groups. For all groups, the configuration of malls was a facilitator; having all stores located on a single floor or use of a right-angled layout, makes navigation and way finding easier. Participants with disabilities and shopkeepers also mentioned wide aisles in the malls and the stores facilitated use.

"Everything is on one level. That's a big thing, because if something happens you know that you're going to be able to get out." (Respondent with disability)

Many barriers related to this factor were discussed. Unclear (e.g., unreadable by people with visual impairments) and inadequately placed signage was a significant obstacle reported by persons with disabilities and rehabilitation professionals. These two groups also mentioned there were too many obstacles (e.g., signs, counters, etc.) in the aisles/corridors of malls. Participants with disabilities and

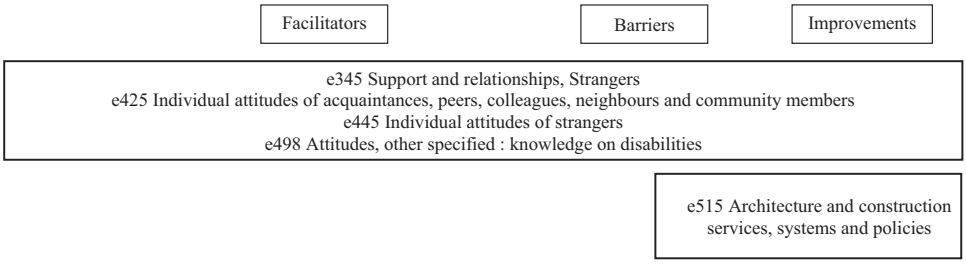

Fig. 3. Perceptions about social environmental factors (facilitators, barriers or improvements) in shopping malls.

shopkeepers said it is problematic when store aisles are narrow, the mall has multiple floors or the mall layout is complex.

"My clientele with a visual impairment try to walk along (side) the stores, but there are displays, clothes, tables. . ." (Rehabilitation professional)

The suggested improvements by respondents of the three groups concerned signage and technologies. Some proposed providing an adapted map of the mall (e.g., in Braille) and better-positioned signage for improved way finding. Integrating technologies such as GPS talking devices was also recommended. Widening the aisles was a suggestion made by participants with disabilities and rehabilitation professionals, while the former group also reported the need to improve the layout of some malls and the flooring by using tactile strips and anti-glare flooring.

"If they had a remote control so I could program the doors into my chair. Then instead of waiting for somebody, I would just press the button and the doors would open." (Respondent with disability)

"[. . .] The signage, the way finding, to make it bigger, to make it, not in your face, but make it, when you come in, you can't miss it." (Shopkeeper)

3.2.1.5. Light (e240), sound (e250), air quality (e260). Only participants with disabilities and rehabilitation professionals talked about the ambient conditions of malls, mentioning lighting and temperature. However, the main concern was sound level. Participants found loud music and background noise hindered their use of malls and suggested reducing the volume of music, reverberation and echo.

"There are some stores where the music is really too loud. We don't hear each other and it's intrusive for everyone." (Respondent with disability)

3.2.2. Social environment factors

Two factors were predominant in participants' perceptions about the social environment of a mall (Fig. 3): the interaction with employees and the architecture services, systems and politicies.

3.2.2.1. Support and relationships, Strangers (e345), Individual attitudes of acquaintances, peers, colleagues, neighbors and community members (e425), Individual attitudes of strangers (e445), Attitudes, other specified: knowledge on disabilities (e498). This was the most frequently mentioned factor of all among the physical and social environments. Although participants from all groups discussed this factor, only shopkeepers and participants with disabilities identified specific facilitators and barriers.

The courtesy of employees and their open-mindedness were seen as important facilitators. Respondents reported staff is generally helpful, and when employees offer assistance to shop to individuals with disabilities, mall use is greatly facilitated.

"The reason I go there is the employees, they are pretty nice." (Respondent with disability)

"We try to the best of our abilities to make them feel they are well served. We give them extra help if they need it." (Shopkeeper)

However, the attitude of shopkeepers/store clerks was also identified as an obstacle. Respondents noted employees sometimes lack knowledge about how to serve and interact with persons with disabilities such that they are not always provided with service meeting their needs. Participating shopkeepers emphasized some challenges when serving consumers with disabilities. Sometimes

additional assistance or a more personalized approach is required. Shopkeepers also mentioned employees are often stressed or feel uncomfortable when serving persons with disabilities.

"My hands are my eyes, so it's to be open to that. A lot of places are already open but still there are places, where we can't touch things because it's vacuum packed and they don't want us to open them." (Respondent with disabilities)

"When I first began to work in retail and I was serving disabled people, I felt very bad." (Shopkeeper)

Respondents reported a need to change shopkeepers' perceptions and to encourage them to be more open-minded. They also indicated shopkeepers should learn about how to better serve their clientele living with disabilities and proposed to achieve this through awareness campaigns and training. Participants from all groups made recommendations for such training; some thought it would be useful for shopkeepers to have access to a resource person (in the mall) or to collaborate with rehabilitation professionals and/or persons living with disabilities. Some respondents thought the training should target the people in charge, such as the managers, while others proposed including all shopping mall employees (e.g., security guards). They also suggested the training could include information sheets and videos.

"Give them information to sensitize them: Hey, you know, we may not be the richest people in the world, but we're part of the consumer population, and yes we have particular needs sometimes, but you really don't have to always take care of us." (Respondent with disability)

Shopkeepers expressed some concerns about training and openness to the clientele with disabilities. For instance, they mentioned it would be difficult to provide training to all their employees, and some shopkeepers might be reluctant to adapt their stores because the perceived benefits may not justify the investments.

3.2.2.2. Architecture and construction services, systems and policies (e515). Participants from all groups suggested improvements related to this code. They noted malls could be improved by having norms for a more open attitude toward clients with disabilities. They proposed that the malls making adaptations and changing their norms to become inclusive environments should advertise their actions to consumers with disabilities and to the general public. To make appropriate and useful modifications, participants suggested involving clients living with disabilities and rehabilitation professionals during renovations.

"Malls should say to their tenants: You want to open a store here? You have to know that we focus on accessibility and on openness to people with disabilities. If you are ok with that, you have to bring that vision into your store." (Rehabilitation professional)

4. Discussion and conclusion

This exploratory study provides empirical data important to inform those in urban design about how the mall environment is experienced by different users with disability as part of their daily lives. This contribution will hopefully have an impact on the design of urban spaces by improving our understanding of the interrelationship between design, disability and space (Imrie, 2012). With the other papers in this special issue, this study appears to be one of the first to explore perceptions about the uses and the environmental facilitators and obstables of malls among people with various disabilities. Others have examined the mall environment while focusing mainly on people with one type of disability (e.g., wheelchair users in McClain, 2000). Our approach involved obtaining information from three groups of participants with different types of mall experiences including shopkeepers who are rarely involved in other studies. In addition to identifying the environmental facilitators and barriers of a mall, the participants provide important recommendations to inform the design of malls to make improvements or renovations that truly respond to users' needs.

It appears from our study that the shopping mall is a public space where people with disabilities carry out different activities and participate in their community. Indeed, the mall is considered more than a place of consumption as participants reported activities such as socialization, entertainment and communication. Rehabilitation professionals and shopkeepers shared the belief that persons with disabilities visit malls for the same reasons as persons without disabilities. Results of studies with people without disabilities support this assertion. In fact, it has been shown that malls contribute to

consumer, social, community and leisure life for individuals without disabilities (El Hedhli et al., 2013; Gilboa & Vilnai-Yavetz, 2013).

In the present study, we identified environmental factors (physical and social) influencing mall use and presented them as perceived facilitors, barriers or improvements using ICF codes. Five factors related to the physical environment seem to affect mall use: the design for wayfinding and orientation, store design and products, exterior access to the mall, the facilities, and ambient conditions. In a study about inclusion in a shopping mall conducted with people with and without disabilities, as well as with older adults, Afacan (2012) found similar factors relating to the circulation, ease of access, path of travel, comfortable use of services, and appropriate use of tactile and audio-visual design features to be relevant. Often, shopping malls are not adequately accessible for clients in wheelchairs in terms of restrooms, elevators or furniture (McClain, 2000).

Some of the physical factors identified in our study were also found in studies on shopping malls involving people without disabilities. For instance, El Hedhli and colleagues (2013) reported the convenience of the mall as a quality people look for, where convenience refers to aspects such as ease of exterior access, access to restrooms or layout. Singh and Sahay (2012) also mentioned the physical infrastucture (mall's size, open spaces) and convenience (e.g., lifts and escalators, ease to locate a store and find one's way in the mall) as important determinants of the shopping experience of their non-disabled participants. The importance of the design for wayfinding and orientation was reported as the most fundamental aspect for the shopper's experience (Dogu & Erkip, 2000) and it was the physical environment factor most reported by our participants. From these findings, it appears that everyone, not only people with disabilities, would benefit from and appreciate modifications made to improve the functionality of the physical environment of malls. Perhaps the only difference between our results and those of other studies examining the physical environment of malls is that our participants did not comment on the importance of security and safety, nor on mall esthetics. This may be because our participants focused mainly on how they could better carry out their activities instead of on the appearance of a mall.

With regard to the social environment, two principal factors were identified: interaction with shopkeepers, and the design norms and services. The first factor was the most mentioned of all the factors in this study. The latter was reported only as something to be improved in the mall. In comparison to the numerous studies examining the physical environment, we found only two studies (Baker et al., 2002; Goodrich & Ramsey, 2012) reporting on the social environment in the context of shopping. Baker and colleagues (2002) reported shoppers with visual impairments want more than structural (i.e., physical) accommodations; they want to be able to participate, to be understood, and to feel like they belong. In their study, Goodrich and Ramsey (2012) showed empathy and assurance positively affect the quality of services of persons with disabilities, improvements that can positively impact the shopping experience for all.

The facilitators and barriers we report do not appear to be unique to shopping malls and may be generalizable across other public settings. Research on a variety of environments (e.g., museums, casinos, medical clinics, schools, and librairies) has been conducted and similar environmental factors have been identified in most of these studies. For instance, Wan (2013) identified the following barriers in casinos: lack of accessibility and insufficient facilities, insufficent space to move around, problems with entrances/exits, and inadequate signage. Issues with ramps, doors, restrooms and flooring have been reported in several other studies (e.g. Meyers, Anderson, Miller, Shipp, & Hoeni, 2002; Newman, 2010). Now that a large number of physical factors related to the use of public spaces have been identified, it is important to move towards examining ways in which these results (i.e., recommended improvements) are implemented, put into action or become public policy issues of importance.

With regard to social factors, our results highlight the interaction and relationship with others as an important facilitator for persons with disabilities and thus support the work conducted in other public environments (e.g., Meyers et al., 2002; Newman, 2010). For example, in casinos, poor staff service was identified as a barrier (Wan, 2013), while in a study on museums, difficulties in communicating with employees had a greater impact on visitors with visual impairments than the physical environment (Poria, Reichel, & Brandt, 2009). Newman (2010) also reported social barriers as being more significant than the physical ones for people with mobility impairments. Clearly, the current norms and standards

emphasize the physical environment, and social environment takes a backseat to exterior access. As Poria and colleages stated (2009), if there is not enough attention paid to the social environment of service and information supply, the full social participation target will not be met. Our study is one of the first to report the impact of the social environment on the use of shopping malls.

Although our participants made several suggestions about how to improve physical accessibility, the most common and frequent recommendations concerned needed changes in the attitude of the staff and the enhancement of their knowledge about how to better serve persons with disabilities. This need for training and education has been identified by others (e.g., Baker et al., 2002; Kadir, Jamaludin, & Rahim, 2013; Meyers et al., 2002) as an efficient way to make shopping malls and other public spaces more inclusive and welcoming for persons with disabilities. Baker and colleagues (2002) suggested that training would enable employees to feel more at ease with consumers with disabilities and, consequently, they would provide better services. When considering the positive implications of an environment more open to persons with disabilities, it was suggested that this openness would enhance the image of stores and public places, employees would be in a better mood (Wan, 2013), and positively influence mall loyalty and positive word of mouth (El Hedhli et al., 2013) making malls more competitive (Kadir et al., 2013).

This study provides some insight as to the use of the ICF in the context of identifying mall uses and the environmental factors influencing their use. The ICF classification was of value and precise enough to detail the uses of the mall as well as the important factors of the physical environment. As previously reported by Chapireau (2005), it was somewhat inadequate in classifying factors of the social environment. For instance, we had to use the category *Strangers* (e345) to code assistance given by shopkeepers and mall staff in shopping malls. Indeed, the classification does not include a category to precisely identify "strangers." There are categories for people in positions of authority, subordinates or health professionals, but not for individuals whom persons with disabilities may encounter daily, such as shopkeepers or drivers of adapted transport vehicles. This lack of precision of the ICF was also noted in ICF chapter 4 entitled *Attitude* where once again, it is only possible to choose the *Stranger* category for shopkeepers. However, using ICF coding allowed us to categorize, using a common language, all the themes mentioned by the participants, whether related to the activities or to factors of the physical environment. Use of a common language will enable comparing our results with those of others exploring other public environments or the same environment from a different perspective.

Finally, by interviewing not only persons with disabilities but also rehabilitation professionnals and shopkeepers, this study provides a more comprehensive understanding of the issues at hand. For example, the rehabilitation professionals reported issues observed during their clinical practice, not mentionned for different reasons during the interviews by the participants with disabilities. Providing shopkeepers with the opportunity to talk about their interactions with people with disabilities enabled highlighting that not only people with disabilities think more knowledge and a good shopkeeper-consumer relationship is needed to improve the mall experience. The results of this research offer actionable guidance for the retail sector. As suggested by Goodrich and Ramsey (2012), if a retailer becomes known as more accommodating to persons with disabilities, this consumer group is likely to respond by promoting the retailer as a retailer of choice.

Given the exploratory nature of this study and the small sample size, these results may not be generalisable to all people with disabilities, health professionnals or shopkeepers. Despite the diversity of impairments among the respondents with a disabilty, our analysis did not allow distinguishing the facilitators and obstacles and uses according to type of disability. It is probable that persons with a visual impariment and those with a mobility impairment may perceive environmental factors differently.

Our results also identify pertinent research questions for future studies in this area. Some might consider it important to validate these perceptions with larger representative samples of the populations of our three groups. This could be done using an adapted and accessible online survey made available to community and governmental organizations having an interest in the social inclusion of people with disabilities. Our study also underscored that training is clearly needed to improve awareness and solutions to the daily challenges of persons with disabilities. Future research should examine the impact of awareness campaigns and shopkeeper and mall personnel training on the shopping

experience of persons with disabilities. Only then will we be able to ensure a real change in societal attitudes towards persons with disabilities.

Disclosure of interest

The authors declare that they have no conflicts of interest concerning this article.

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