Beyond Accessible Aisles? Psychosocial Inclusivity of Shopping Experience: an ethnographic investigation

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Purpose: Although the importance of non-physical inclusivity has been recognised in inclusive design the current understanding of psychosocial aspects in inclusive design is currently scarce. This study reports a study of supermarket shopping experience of older individuals, designed and conducted to explore the concept of psychosocial aspects in older individuals' supermarket shopping experience by identifying any possible psychosocial components.

Methods: Empirical investigation i.e. non-participant observation was conducted with eight participants aged 60 and over in order to achieve the research purpose. The results from the observational investigation was analysed by multiple coders using several thematic coding analysis methods.

Findings: Findings suggest four major dimensions including 'cognitive', 'emotional', 'social', and 'value' factors, define and affect psychosocial inclusivity of older adults' supermarket shopping experience. Each factor is further defined and detailed with a series of sub-themes, and key aspects in regard to each dimension are highlighted.

Keywords; psychosocial inclusivity, inclusive design, accessibility, supermarket shopping, older individuals, observation

Introduction

An ageing population with more active roles in society and significant disposable income, related to an increasingly vocal community of individuals with disabilities, have been leading to the growing visibility of social inequality, isolation, and need for inclusivity beyond physical accessibility (Hedvall,

2013; Nickpour et al., 2012; Gaver & Martin, 2000; Demirkan, 2007; Imrie & Hall, 2003; Demirbilek & Demirkan, 1998). Theses numerous social issues can be seen to impact the daily lives of individuals who often lack social support and contact and who may suffer from unemployment, low economic status and discrimination (Salles, 2013).

Inclusive design is an approach for addressing these issues to move towards greater equality and diversity (Da Silva, 2013; McCarron et al., 2013; Suzman & Beard, 2011; Stephanidis & Emiliani, 1999). The purpose of inclusive design as a design philosophy is to provide better life opportunities for as many people as possible via the design of accessible services, products, and environments (Fletcher, 2011; Coleman et al., 2007). British Standards Institute (2005) defined the concept of inclusive design as "the design of mainstream products and/or services that are accessible to, and usable by, as many people as reasonably possible ... without the need for special adaptation or specialised design.". This paper adopts the British Standards Institute (2005) definition as an operational definition of the term 'inclusive design'. However, there is an argument that the application of inclusive design as a holistic and positive approach has been rather limited although it is generally recognised as good practice (Persson et al., 2015). Further, it can be noted that complex global socio-cultural challenges and life-style changes are highlighting issues of design exclusion beyond those which are purely physical or access related. The wider world of design has moved beyond 'physical' and has witnessed the emergence of new metaphysical fields including emotional design (Norman, 2005), pleasurable design (Jordan, 2002) experience design (Hassenzahl et al., 2010; Pullman & Gross, 2004; Hekkert et al., 2003), human-centred design (Giacomin, 2014; Brown, 2009) and meaning-centred design (Giacomin, 2017; Verganti, 2013). However, inclusive design has remained largely focused on the more physical and tangible aspects of functionality, usability and accessibility (Steinfeld, 2013). These are referred to as 'physical aspects' in this paper.

The emphasis on physical aspects in the field of inclusive design is also reflected in the existing regulations and policies in developed countries. These mainly focus on barriers to physical access (barrier-free access) (Persson et al., 2015; ANSI, 1998) in relation to the development and provision of infrastructure and technologies (Lim & Nickpour, 2015). It is now often noted that additional exploration, evaluation and development are needed in order to achieve holistic and genuine inclusivity within our increasingly complex and diverse societies (Frye, 2013; Hedvall, 2013; Nickpour et al., 2012; Gaver & Martin, 2000; Demirkan, 2007; Imrie & Hall, 2003; Demirbilek & Demirkan, 1998). Considering inclusive design's origin, history and context, it is perhaps not surprising that non-physical aspects in inclusive design are currently scarce, neither systematically explored in the existing literature (Lim & Nickpour, 2015), nor in applications of inclusive design (Steinfeld, 2013). In this study, therefore, these non-physical aspects of inclusivity including psychological and social

aspects are referred to as 'psychosocial aspects'.

The 'psychosocial' is usually described as a context-dependent and multidisciplinary concept. The term 'psychosocial' is defined as "the close relation between psychological factors (emotion, behaviour, cognition) and the socio-cultural context" (Psychosocial Working Group, 2003). It has been used mostly in medical and psychiatry journals since the 1950s, and since the 1990s its usage has increased (Roseneil, 2014). Psychosocial issues have been widely studied in psychology, social sciences, and the humanities (Roseneil, 2014).

Existing literature on inclusive design focusses mainly on accessibility and physical aspects of experience, thus there appears to be an opportunity for integrating further research which addresses the psychological and social aspects of inclusion. Table 2 provides a core set of definitions of the term 'psychosocial' and the most commonly used term, which is 'psychosocial intervention', identified through a review of the relevant literature from fields, including psychology, sociology, healthcare, ergonomics, and design.

Table 1 Frequently cited definitions of the term 'psychosocial'

Term	Definition	Context	Key notion
Psychosocial	"Relating to the interrelation of social factors and individual thought and behaviour" (Oxford English dictionary, 2017)	General	Social factors/ individual thought/ behaviour
	"The close relation between psychological factors (emotion, behaviour, cognition) and the socio-cultural context" (Jordans et al., 2010)	Mental health (Improving quality of care for children)	Socio-cultural context/ emotion/ cognition/behaviour
Psychosocial intervention	"Factors pertaining to a person's ability to deal effectively with the demands and challenges of everyday life. This involves a person's ability to maintain a state of mental well-being and to demonstrate this in adaptive and positive behaviour while interacting with others, his/her culture and environment." (Andersen et al. 2014)	Health care (Study of pain-identifying a relationship between psychosocial aspects and chronical musculoskeletal pain)	Mental well-being/ adaptive and positive behaviour/ culture/ environment
	"Including practices that have the purpose of improving the patient's psychological, social and behavioural functioning (Thirsk et al., 2014)."	Health care	Psychological/ social/ behavioural/ improving functioning

	(Improving patients' psychosocial functioning)	

"Cognitive behavioural therapy for patients, family intervention for family members and case management for patients and families" (Ruggeri et al., 2013)	Mental health (Improving quality of mental health care)	Cognitive behavioural therapy (CBT)/ family intervention/ case management
"Improving quality of life and maximizing function in the context of existing deficits. Such interventions use a wide range of approaches including behaviour-oriented, emotion-oriented, cognition-oriented, and stimulation-oriented approaches and are carried out by a wide range of health and social care practitioners." (Vernooij-Dassen et al., 2010)	Psychogeriatric (Improving quality of life and care of people with dementia)	Quality of life/ maximising function/ behaviour-oriented/ emotion-oriented/ cognition-oriented/ simulation-oriented
"To produce some beneficial effect on psychological distress or emotional adjustment of patients" (Rodgers et al., 2005)	Health care (Improving quality of life and care)	Psychological destress/ emotional adjustment
"being any intervention that focuses on psychological and/ or social factors rather than biological factors" (Ruddy & House, 2005)	Mental health (Improving quality of care)	Psychological/ social
"Any programme that aims to improve the psychosocial well-being of people." (Psychosocial Working Group, 2003)	Complex emergencies (Improving psychosocial well-being)	Well-being
"Studies employing intervention techniques designed to utilize cognitive, behavioural or social mechanisms of action" (Cooke et al., 2001)	Psychogeriatric (Improving psychosocial intervention for care givers)	Cognitive/ behavioural/ social/ mechanisms of action

As an initial step, an operational definition of the expression "psychosocial inclusivity in design" was required. Following a review via the search keywords psychosocial, sociology, healthcare, and

ergonomics, a set of definitions of psychosocial were assembled into a database which served as the basis for a thematic analysis. This resulted in an operational definition of 'psychosocial inclusivity' in design which was adopted for the purpose of the current study:

"provision of equal opportunities for better quality of life to as many people as possible by considering psychological social factors"

Having established an operational definition of psychosocial inclusivity which is appropriate for design applications, the remaining sections of the paper included empirical investigation performed in order to identify possible components which contribute to the psychosocial inclusivity construct. To achieve this purpose, two research questions were established:

a) Do psychosocial aspects affect older individuals' supermarket shopping experience?

b) What are the possible psychosocial components that need to be considered for better inclusivity in shopping?

1   Methodology

1.1   Choosing an ethnographic context for the study

Participant demographics

The two key beneficiaries of inclusive design are older population and individuals with disabilities (Hedvall, 2013; Nickpour et al., 2012; Gaver & Martin, 2000; Demirkan, 2007; Imrie & Hall, 2003; Demirbilek & Demirkan, 1998). In this paper, older individuals were selected as a key audience. The World Health Organization (WHO, 2007) defines 'older person' as an individual above "chronological age of 60 or 65". This is also the retirement age in most developed countries, e.g. 60 years for females and 65 years for males in the UK are state pensionable age (Mein et al., 2000). The United Nations (UN, 2007) refers to the older population as aged 60 and over. In this study, WHO terminology and definitions were adopted to refer to the target group i.e. 'older person/people' above 60 years of age, alongside similar terms such as 'older individuals', 'elderly people', 'senior citizens' and 'older adults'.

Activity and context

Inclusive design is applied in diverse contexts e.g. the design of transport systems; premises; built environment and facilities; education; products and goods; services (Casserley & Ormerod, 2003). Within the contexts, a practical implication for psychosocially inclusive design is often evaluated via 'Instrumental Activities of Daily Living' (IADL: housework; preparing meals; taking medication managing money; shopping for groceries or clothing; use of the telephone or other forms of

communication; transportation within the community). IADL are essential activities for independent living (Spector et al., 1987), particularly by older individuals (Katz, 1983; Lawton & Brody, 1970).

Within IADL, it has been argued that shopping is the activity that is strongly affected by both physical and non-physical aspects including individuals' socioeconomic status (Pechey & Monsivais, 2016; Ministry of Agriculture et al., 2014; Ishikawa et al., 2013); health and physical conditions; and geographic availability (Ishikawa et al., 2016; Yakushiji & Takahashi, 2014; Aggarwal et al., 2014; Pettigrew et al., 2005; Chow et al., 2014; Rose & Richards, 2004; Aylott & Mitchell, 1998). Shopping is also frequently related with other daily activities e.g. money management, personal transportation, and preparing meals (Spector et al., 1987)

Furthermore, older individuals' supermarket shopping is considered as one of the most important contributors to choice of diet and independent lifestyle (Lang & Hooker, 2013; Thompson et al., 2011). Physical aspects of store environment e.g. parking access, the availability of food products in appropriate sizes, accessibility of products on the shelves, and queues at checkouts (Moschis et al., 2004; Hare, 2003; Hare et al., 2001; Goodwin & McElwee, 1999; Dychtwald, 1997; Moschis, 1992) have been discussed as significant issues that impact supermarket shopping experience of older individuals. While physical inclusivity issues are evident, combinations of health, psychological, and social factors such as social isolation, mental illness (Davies & Knutson, 1991), social interaction (Moschis et al., 2004; Leventhal, 1997) , and entertainment (Tongren, 1988), the attitude of staffs also significant issues that affect the older individuals' supermarket shopping experience.

These have been suggested that supermarket shopping affects older individuals' physical, psychological and social well-being (Amarantos et al., 2001). These aspects of well-being are related to quality of life of human, which is defined by Felce and Perry (1995) as "a multi-faceted concept comprised of subjective evaluations of material, physical, emotional and social well-being". In this study therefore, supermarket shopping was chosen as the ethnographic context since it involves a rich mixture of not only physical but also psychosocial considerations.

1.2   Choosing method for the study

A Non-participant observation (fly-on-the-wall observation) (Robson and McCartan, 2016) which is the one of the human centred design tools (Giacomin, 2014) was selected as an empirical investigational method to identify any psychosocial aspects of the supermarket shopping experience which emerge in the real-world.

1.3   Sampling

Ishikawa et al. (2013) argued that supermarket shopping reflects both personal preference and correlates with the individuals' socio-economic circumstances. The three main marketing categories

relative to best known UK supermarkets are presented in Table 2. The supermarket brands are presented based on their marketing distinction of high, middle, or low -cost supermarkets (Pechey & Monsivais, 2015), and their market share and number of stores are provided for reference (USDA Foreign Agricultural Service, 2016).

Table 2 supermarkets in the UK categorised by target customers

Category by cost	Supermarket	Market share (2016)	Number of stores (2016)
High-cost	Waitrose	5.4%	350
	M&S	4.3%	914
Medium-cost	Tesco	28.2%	3,493
	Sainsbury's	16.0%	1,312
	Asda	15.6%	626
	Morrisons	10.4%	569
	The Co-operative	6.5%	4,000
Low-cost	Aldi	6.2 %	620
	Lidl	4.6%	630
	Iceland	2.1%	864

Additionally, in 2015 over 99.7 percent of the UK households (24,828/24,879) used medium-cost supermarkets including Tesco, Sainsbury's, and Asda (Pechey & Monsivais, 2015) as part of their major shopping. Also, the market share (76.70%) and the number of stores (8,688) of this category are more than double compared to those of other two categories.

Therefore, older individuals (n=8) who use the medium-cost supermarkets at least once in a fortnight were chosen as participants for the observational investigation. The participants are consisted of three males and five females. Prior to starting the investigation, a research ethics approval was sought and granted by the research Ethics Committee of Brunel University. The ethical and consent forms were provided at the beginning of the investigation.

2 Data collection and analysis

2.1 Observational study protocol

Non-participant observational investigations were conducted to identify any psychosocial aspects by observing older individuals' real-time supermarket shopping experience. As a familiarisation stage, an initial interview was carried out for approximately 30 minutes at the beginning of each

observation session at the participant's home. The actual observation session began from the participants' outward journey to the supermarkets. After completing the observation, a final interview of was conducted in each participant's home for approximately 30 to 60 minutes which sought further information and feedback.

2.2 Observational study data analysis

The data from the observations were analysed by two coders (one final year PhD researcher in design and one design researcher with over 15 years experience) using qualitative data analysis methods including the domain and taxonomic coding, process coding, and NVivo10 software. The analysis process followed the 'six phases of thematic analysis' (Braun & Clarke, 2006): familiarisation with the data; generating initial codes; searching for themes; reviewing themes; defining and naming themes; producing the report. The analysed data was reviewed by a design researcher with over 15 years experience. The '15-point checklist of criteria for good thematic analysis' (Braun and Clarke, 2006) was adopted for reviewing the final results of the data analysis.

3 Results

Findings from the observational investigation were categorised under four main groups which are 'Psychosocial aspects'; 'Physical aspects' (physical factors e.g. accessibility, usability, efficiency, etc.); 'Shopping' (supermarket-related factors e.g. store items, facilities and environments, surrounding facilities, etc.); 'General background' (individual's socio-demographic characteristics, physical condition, etc.). The results pertaining to the concept of psychosocial inclusivity, which is the 'Psychosocial aspects' category, and the discussion of the interpretations are presented below.

Psychosocial aspects

The psychosocial aspects category includes four main themes: *Cognitive factors*, *Social factors, Emotional factors,* and *Value factors.* The four main themes along with their associated subthemes are presented in Table 3. The themes, sub-themes and codes are ordered according to their frequency of occurrence which was extracted from the thematic coding database of the observational investigation.

Table 3 Psychosocial aspects of supermarket shopping of older individuals

Theme	Sub-theme	Code (number of occurrences)	
Cognition factors	Cognitive judgement	Preference of	Supermarket products and services (n=38)
			Life style, social, public related, etc. (n=7)
		Familiarity (n=30)	

		Helpfulness (Supermarket products and services [n=15])	
Self-awareness		of Health (n=9)	
		of Age (n=1)	

Emotional factors	Positive emotion (Positive affect)	Enjoyment (n=32)	
		Pleasure (n=32)	
		Satisfaction with Supermarket related product and service (n=32)	
		Sense of independence (n=1)	
	Negative emotion (Negative affect)	Frustration (n=11)	
		Tiresomeness (annoyance) (n=5)	
Social factors	Support and Service	Support from other people (n=6)	
		Social service (n=1)	
	Social activity	Hobbies (class, club etc.) (n=19)	
		Volunteering activities (n=5)	
	Socialising	Interaction with others in the super market (n=32)	
		Having guest (entertaining, hosting etc.) (n=2)	
	Public attitude	Public awareness and language (n=7)	
		Generational difference (n=1)	
Value factors	Satisfaction	Sense of belonging (n=14)	Life-satisfaction (n=3)
		Social and public related satisfaction (n=12)	Reliability & Trust (n=1)
	Happiness (n=12)		
	Self-esteem	Self-satisfaction (n=5)	
		Self-confidence (n=3)	

Cognitive factors

The 'Cognitive' factors theme consisted of two sub-themes which are 'Cognitive judgement' and 'self-awareness'. The 'Cognitive judgement' sub-theme in turn consisted of the codes of *Preference (supermarket products and services; Life style, social, public related, etc.); Familiarity; Helpfulness*

(supermarket products and services). 'Self-awareness' sub-theme included *Self-awareness of health* and *Self-awareness of age.* The codes of each sub-theme were presented in the Table 3.

Messick (1994) and Lazarus (1991) argues that the notion of 'Cognition' is a broad and over-arching concept among various areas of application. The general definition of the term cognition is "the mental action or process of acquiring knowledge and understanding through thought, experience, and the senses." (Oxford English Dictionary, 2017). On the other hand, Messick (1994) defined the term 'cognitive styles' as "characteristic modes of perceiving, remembering, thinking, problem-solving, and decision making, reflective of information-processing regularities that develop in congenial ways around underlying personality trends". This definition was used to describe the cognitive factors in this study. The 'Cognitive factors' theme contains behaviour, attitude, and thinking of participants in their supermarket shopping experiences. the most frequently mentioned sub-themes and codes by the participants *were Preference* of supermarket products and services (n=38*) and Familiarity (n=30)*. Indicative examples of participant comments include:

> *[Preference] "Yes I got a later date on it. [...] If I got the one it's gonna be expired by tomorrow, I would only use part of it, and it's going off a bit before I consume that, so I always hang around for the one with the most time left on it [...] Yes, I only use even top 300 ml top like that I only ... that allows me five days. [...] If it's few days left before it's expired, it's not very nice. It's gonna be passed expire date." (Male, 72)*

> *[Familiarity] "I know the layout of the supermarket and locations of the items very well, so it's useful." (Male, 72)*

Emotional factors

'Emotional' factors theme consisted of two sub-themes 'Positive emotion (Positive affection)' and 'Negative emotion (Negative affection)'. 'Positive emotions' sub-theme included *Enjoyment; Pleasure; Satisfaction with supermarket products and services; Sense of independence.* 'Negative emotions' sub-theme included *frustration; Tiresomeness (annoyance and losing interest)*.

'Emotion' is a broad over-arching concept, hence there is a lack of consensus in the existing literature on the definition of the term emotion (Mulligan & Scherer, 2012; Cole et al., 2004; Kleinginna & Kleinginna, 1981; Chaplin & Krawiec, 1979). English and Ava (1958) proposed the definition of emotion as "a complex feeling-state accompanied by characteristic motor and glandular activities; or a complex behaviour in which the visceral component predominates.", and this was used in this paper. Within the definition, the participants' senses or feeling related codes caused by their mood, relations with others, or circumstances were categorised in this theme. *Enjoyment* (n=32), *Pleasure* (n=32), *Satisfaction with supermarket products and services* (n=68), and *Frustration*

(n=11) were amongst the most noticeable codes encountered during the older individuals' supermarket shopping. Examples of participants' comments include:

[Enjoyment] *"Oh, quite often! I mean today we didn't, no chatting today at all. I didn't see anyone I knew, and I didn't see anyone else to speak to … oh we often do … especially, perhaps about cat food […] we are all doing the same things, we know what we are doing. And I will talk about it because we do."* (Female, 80)

[Pleasure] *"Uhm well, I enjoy going there physically because often especially in the winter, the sun is going down, and the so very nice sky, and the yes they got the trees there and as I said little leaves coming out from the bottom, and they are so pretty."* (Female, 81)

[Satisfaction] *"I like the bargain. And finding everything I am looking for is exactly in the same place it was in last week. That's quite satisfactory […] Well, when they move things. […] when you find an assistant, they are all very very helpful, really nice. They spend time to help you."* (Female, 81)

[Frustration] *"I mean I'll drive around here to go shopping and bits. But I don't enjoy it. So I'd rather go on the train if I go anywhere. Um, I think there's a bit of an old age thing really. […] I'm, not losing my confidence but I'm, I'm very, I'm not slow but I don't know. I just feel that I, I could cause an accident because perhaps, no, I don't know. Anyway, I don't, I don't enjoy it anymore so."* (Female, 74)

Social factors

The 'Social' factors theme consisted of four sub-themes: *'*Support and Service', 'Social activity', 'Socialising', and 'Public attitude'*.* The 'Support and service' sub-theme included S*upport from others*; *Social service*. The 'Social activity' sub-theme included *Hobbies (classes, clubs, etc.); Volunteering activities. The* 'Socialising' sub-theme included *Having guest (entertaining, hosting etc.)*; *Interaction with others in the super market*. The 'Public attitude' sub-theme included *Public awareness and language; Generational differences.* The codes of each sub-theme were presented in the Table 3.

Kaslow et al. (2007) have proposed that the concept of 'social factor' as "physical environment, external stressors, family environment, interpersonal relationships, social support and isolation, role models, social expectations, value system, sociocultural factors, and culture.".

 Social factors strongly influence on individuals' quality of life including human well-being (Larson, 1996) and have interdependency with physical, emotional, and mental factors. 'Social factors' in this study referred to any support, services, activities, public awareness and attitude which can affect

participants' thought, feeling, and behaviour in their shopping experience. The codes of *Interaction with others in the supermarket* (n=32), *Hobbies* (n=19), and *Public awareness and language* (n=7) were the most repeatedly mentioned by the participants. Indicative examples of participant comments include:

> *[Interaction with others in the supermarket] "I don't want to do online shopping because I like to go and see things and people." [Female, 80]*

> *[Hobbies (classes, clubs, etc.)] "Tomorrow there is my coffee morning group. Yesterday, I had to miss my scrabble group because it was my granddaughter's graduation in the Sussex. […] Tuesday is different scrabble group. Monday is I call a day off. Sunday, I go to a church in the morning, and friend comes to see me most Sunday afternoon." [Female, 80]*

> *[Public awareness and language] "But it just makes it easier for the general public as well. Because it's difficult when you're in there on a scooter for them to get around you, and very often they don't see you. I mean I wear a lime green jacket which you'll see when we go over. And very often people, they'll walk into me and they'll say, 'Oh, sorry! Didn't see you there.' And my scooter's quite big as well!" [Female, late 60]*

Value factors

The 'Value' factors theme consisted of three sub-themes; 'Satisfaction', 'Happiness', and 'Self-esteem'. The 'Satisfaction' sub-theme included the codes *of Sense of belonging*; *Social and public related satisfaction; Life-satisfaction; Reliability and Trust.* The 'Self-esteem' sub-theme included the codes of *Self-satisfaction* and S*elf-confidence.* The codes of each sub-theme were presented in the Table 3.

The concept of 'value' is a multi-faceted and wide-spanning notion used in diverse fields such as physics, music, chemistry, ethics, mathematics, marketing, and business (Gil Saura et al., 2008; Zeithaml, 1988). Diener and Suh (1997) have proposed three bases: continuous choice; judgement of satisfaction; judgment with reference to cultural norms or value system, that an individual can identify what is valuable or not to them. In this study, the Oxford English Dictionary (2017) definition: "principles or standards of behaviour; one's judgment of what is important in life." was used as reference. Therefore, participants' feelings and thoughts regarding their shopping experiences as well as themselves were extracted in this theme. The codes of *Sense of belonging* (n=14), *Happiness* (n=12), and *Social and public related Satisfaction* (n=12) were the most repeatedly raised by the participants. Indicative examples of participant comments include:

> *[Sense of belonging] "[…] I always try to go to the counter to see people I know that I recognise would be pleased to say you know "you've had a haircut, nice today." "did you*

have a nice holiday?" or maybe it's 5 o'clock evening, "you are going home soon are you tired?" […]" (Female, 85)

[Happiness] "Going to the supermarket with my partner is the happiest thing" (Female, 73)

[Social and public related Satisfaction] "Because I go to supermarket, I see more neighbours and talk to them and also get local information. It's amazing" (Female, 85)

4 Discussion

This study aimed to address two research questions: a) Do psychosocial aspects affect older individuals' supermarket shopping experiences? b) What are the possible psychosocial components that need to be considered for better inclusivity in shopping? These research questions were addressed through the empirical investigation i.e. observations. The psychosocial aspects of older individuals' supermarket shopping that emerged from the data were named *Cognitive, Social*, *Emotional* and *Value* factors*.*

Cognitive factors: The results suggested that older individuals' shopping experience is influenced by a number of 'cognitive' factors which can be grouped under the sub-themes of 'Cognitive judgement' and 'Self-awareness'.

The results confirmed *Preference* (supermarket products and services), and *Familiarity* (Pechey & Monsivais, 2015; Vyth et al., 2010; Vannoppen et al., 2002; Arora & Stoner, 1996) as codes of the sub-theme 'Cognitive judgement' as noted by previous researchers.

However, Self-awareness of health and age, which had not been identified in the previous researches, were identified as an additional sub-theme in this paper. In one instance, the participant who made the different choice of supermarket due to awareness of her back pain.

Emotional factors: The results suggested that older individuals' supermarket shopping experience is affected by both physical and 'emotional' factors including feelings of pleasure and frustration.

Existing literature on supermarket shopping emphasises *emotional reaction* as an important factor mainly considered by supermarkets for marketing purposes. It was stressed that the emotional reaction as one of the key drivers for consumer decision making (Ambler et al., 2004).

This study stressed a richer scope of considerations through identifying the positive or negative emotions experienced by older individuals during their supermarket shopping activities. In one instance, an older shopper stressed strong negative emotions of *Embarrassment*, and *Self-consciousness* in the process of renting a mobility scooter for use in store. The participant needed to que for a considerable amount of time and had to speak to customer services and security in order

to borrow a mobility scooter and its key for use in supermarket. In such case, the supermarket aimed at physical inclusion through providing mobility assistance and improving accessibility, convenience, and usability for shoppers. However, the shopper experienced psychosocial exclusion, feeling embarrassed, uncomfortable and self-conscious due to the unnecessarily complex process of renting a scooter. This suggests that focussing only on physical inclusivity in supermarket stores can lead to experiences of negative emotion for the older shoppers.

Social factors: The results suggested that older individual's shopping experience is influenced by 'social' factors such as gaining motivation for shopping; feeling positive or negative emotions; and choosing supermarket products and services, stores or transportation. The social factors were found to involve four sub-themes of: Support and service, Social activity, Socialising, and Public attitude.

In the previous literature, socio-economic status was already stressed as an important social factor (Pechey et al., 2013; Appelhans et al., 2012; UK Department for Environment, Food and Rural Affairs, 2011; Giskes et al., 2010; Darmon and Drewnowski, 2008; Aylott & Mitchell, 1998).

However, several social related sub-themes including 'Support and service', 'Social activities', 'Socialising', and 'Public attitude', were newly identified through this study, possibly for the first time. On various occasions, participants stressed how their shopping experience was mainly driven or significantly affected by social factors e.g. going to supermarket to see or meet people, spending time with partner, or shop for neighbours physically unable to shop. This emphasises why design for social inclusivity beyond physical inclusivity should be a key consideration.

Value factors: The results suggested that older individual's supermarket shopping experience is influenced by certain values (happiness, satisfaction, and self-esteem) which have a important influence. In one instance, feelings of 'happiness' when seeing the sunset on the way back from supermarkets or shopping with a partner appear to be difficult to separate from the particular shopping interactions and events.

The existing literature re-confirmed results Life-satisfaction and Self-satisfaction. Literature supports the association between shoppers' shopping experience and their well-being at supermarkets and malls (Grzeskowiak et al., 2016; Wagner, 2007; Lavin, 2005). Additionally, satisfaction with the state of health is considered as one factor that influence older individuals' shopping behaviour (Ishikawa et al., 2016).

However, results suggested further sub-themes including 'happiness' and 'self-esteem' as relevant values and several new codes were also identified. The satisfaction with the participants' life or society through their shopping experiences were implied (e.g. choosing fair trade items; having trust in services or products in the store; or feeling a sense of belonging by engaging with others). This

emphasises the association between quality of shopping experience and certain values which considering 'core values' of older individuals can lead to better shopping experiences.

In addition to considering each component (i.e. Cognitive, Emotional, Social, and Value) individually, the data collected from this study proposes the need for evaluating the psychosocial components in cognition because of the obvious correlations identified in the data. Various statements collected from the data base as part of the study involved joint concept, with codes from more than two themes being used to explain the same need, thought, or desire. This is specifically important when designing for psychosocially inclusive supermarket shopping experiences for older individuals so as to adopt a convergent, holistic, and connected approach. Therefore, the dimensions can be used by design professionals and academics or third parties to consider the concept of psychosocial aspects in design of better supermarket shopping experience. The results also can be developed as a complete set of toolkit or framework by conducting further research

Limitations

A methodological limitation of the current study was the sampling and data collection. Due to recruitment difficulties, there was a gender imbalance in participants (Male: 3 and Female: 5). While there is not one specific sample size which is generally preferred by the research community, due to the various factors which should be considered in study design (Robson and McCartan, 2016), the total sample size of eight individuals might be considered to be small from some points of view.

The scope of this paper was limited to older individuals' shopping experiences. When it comes to the wider concept of inclusive design, further key contexts and IADL beyond shopping need to also be investigated in order to thoroughly explore the concept of psychosocial inclusivity. The current findings from this paper provide only initial dimensions in order to extend the concept of psychosocially inclusive design but can also be considered a preliminary step.

4   Conclusions and Future work

Conclusions

The current understanding of the notion of inclusive design is somewhat scarce in its application although the importance of inclusive design has been recognised in various contexts (Persson et al., 2015). This is perhaps due to the limited understanding of 'psychosocial inclusivity'. In this study, therefore, the older individuals' supermarket shopping was selected as a first context in order to explore the nature and also the role of psychosocial inclusivity in design. The investigation was performed by using the human centred design method of observation with a total of eight older

individuals. Through the investigation, several psychosocial aspects of supermarket shopping of older individuals were identified and categorised based on their implications or meaning using thematic coding analysis, under the four major themes which are 'cognitive', 'emotional', 'social', and 'value' factors (Table 3). Several these components for psychosocial aspects can be confirmed in the previous research. However, specific details of these themes including code are not well established in the existing literature. This is perhaps explained that the psychosocial aspects are less explicit and visible, and thus more challenging and complex in terms of its definition, improvement and measurement.

The findings from this study suggest: (a) the importance and significance of psychosocial inclusivity supermarket shopping of older individuals and in design and (b) a partial list of components for psychosocial inclusivity in design which can be extended via further studies.

Future work

This study is part of a research project that aims for exploring the notion of psychosocial inclusivity in design by identifying a definition and dimensions of psychosocial inclusivity in design. In this study, the partial components for the dimensions of psychosocial inclusivity in design were identified based on the older individuals' supermarket shopping experience. Considering diverse contexts of inclusive design, further contexts should be studied so as to provide universal practicality and validity of the results. For the validation of the results and identification of the further components, ethnographic interviews in the context of product and service with individuals with mobility impairment will be conducted in the later study.

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