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Paper Title: The role of playfulness and sensory experiences in design for public health and for ageing well

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Abstract:

The chapter provides an insight into the role of design and sensory experiences in public health and ageing well through the lenses of playful design. It presents, through a number of relevant examples, the role of playfulness as a trigger for engaging people and especially older adults with physical exercise through tangible play. Emphasis is placed on the potential, benefits and challenges of designing playful sensory experiences and activities (interventions) for public health and ageing well.

Following a review of the relevant literature on playfulness and sensory experiences and health, a number of projects that incorporate playfulness and sensory experiences are presented. This is followed by a presentation of the Active Parks case study.

Active Parks co-created an interactive and playful walking trail that offers casual physical activity in one of Lancaster city's park. Working with the local community and a several key stakeholders a number of interactive and playful multisensory proof-of-concept prototypes were designed, developed and tested in the park.

Based on the literature and the aforementioned case study a number of recommendations are provided on how to design playful sensory experiences for public health.

This is the first paper of its kind to offer such practical recommendations that aim at public health and playfulness focusing on adults and older users.

Keywords: playfulness, public health, ageing well; playful design, co-design, participatory design, interactive play, interaction design, design in healthcare.

Introduction

Play is one of the main drivers of the human cultural development. Play has been the topic of research across different areas including psychology (Berlyne, 1969), learning (Singer, 2013), marketing (Huotari and Hamari, 2012), child development (Barnett, 1990), ethnography (Gaver et al., 1999), Human Computer Interaction (Kuts, 2009) and game design (Deterding et al., 2011). Play and playfulness encourage exploration and creativity, stimulates social interaction and competition. Play often provides satisfaction through a direct reward for one's successful actions and most importantly, entertains and allows us to 'escape' from realities of everyday lives.

This chapter presents and discusses the value and role of playfulness for the design of activities and interventions situated in urban spaces and aimed at public and ageing well. After the presentation and discussion of the related work, the authors present the Active Parks case study, that aimed at co-designing a playful tangible health trail in a public park in order to engage sedentary and older park users with casual physical activity. The design process followed and playful proof-of-concept prototypes develop offer several valuable insights as to the design of similar playful activities in public urban spaces. Following the lessons learnt from the case study and the study of the relevant literature the authors offer

four key values and ten practical recommendations on the design of playful experiences for public health and ageing well in urban spaces.

Related Work

Playfulness

There are several definitions of 'playfulness'. The most common ones widely accepted in the literature define 'playfulness' as *a dispositional tendency to engage in play* (Van Vleet and Feeney, 2015) or *the pre-disposition to frame (or reframe) a situation in such a way as to provide one-self (and possibly others) with amusement, humour, and/or entertainment* (Barnett, 2007).

Play and being playful is how we first experience the world around us (Barnett, 1990), losing ourselves in play, whether it was creating a make-believe world, throwing a ball between classmates, teasing and role-playing with friends, etc. Unfortunately as we grow older we tend to distance ourselves from playfulness and get locked into the linear, problem-solution, adult mind-set. As Stanley Hall put it:

> "*We do not quit playing because we grow old, we grow old because we quit playing*" (Hall, 1904, pp 235).

Although playfulness is traditionally associated with children, it is equally significant for adults. Van Vleet and Feeney (2015) identify in their review of the literature the importance of play behaviour and playfulness in adulthood and the need for more research in this area.

Playful Design, Playfulness and Tangible Play in Health

Playful design, the mapping of playful experiences from games/toys to other non-game context experiences, has gained interest in recent years (Walsh et al 2010). Although it has been a subject of research (Ferrara, 2012; Deterding et al., 2013; Bekker et al., 2010; Salah et al., 2014) it has not been explored as widely in the area of health and ageing well and more precisely in engaging adults and older people with physical activity.

There is a body of research evidence as reported in (Staempfli, 2007; Proyer 2014a; Proyer 2014b; Mahdjoubi and Spencer, 2015), which suggests that playfulness can contribute to healthy ageing, by stimulating higher levels of cognitive functioning, related to positive emotions, wellbeing, intrinsic life goals, and coping with stress. Furthermore, playfulness, via its link to promoting an active way of life (as a health-oriented behaviour), might also be associated with greater levels of physical activity (Proyer, 2014b; Mahdjoubi and Spencer, 2015).

In addition to this, play is an inherently human aspect that stimulates wellbeing (McGonigal, 2011), especially when presented in the form of playful interactions -*interactions that incorporate elements of fun and play* (Salah et al., 2014)- as they encourage and facilitate environments where users are more interested in enjoying themselves than they are in achieving a specific task (Dekel et al., 2005).

Environments such as public spaces (e.g. parks, squares, etc.) are ideal for this due to their interactive nature and since they are designed to be looked at, walked around, and used by many of people on a daily basis (Dekel et al., 2005). Hence the development of ambient play environments provides an opportunity to design and develop playful interactions to stimulate social and physical play (Bekket et al., 2010). This is further reinforced by the design of tangible play artefacts, where physical artefacts are electronically augmented and enhanced to trigger various digital events to happen (Nam and Kim, 2011; Salah et al., 2014). The blending of tangible (physical) and digital elements have recently grown in popularity[1,2] within video games and toys too, with physical game pieces becoming

[1] See http://uk.ign.com/articles/2014/02/07/skylanders-in-top-20-game-franchises-ever-175-million-toys-sold Last accessed 15 October 2015

a popular addition to traditional digital games. The reason behind this lies in the qualities only found when interacting with physical objects. Namely the multi-sensory experience from handling a physical object – the texture, shape, weight, colour, size-, something that one cannot simply discover from intangible digital artefacts. Multi-sensory stimulation has been found to be of therapeutic value for people with Dementia (Baker et al., 2001; Dias de Macedo et al., 2015) and Parkinson's (Suteerawattananon et al., 2004; Jiang and Norman, 2006) as well as for supporting healthy ageing (Mora, 2013; Park and Bischof, 2013).

Although tangible play artefacts have been found to have the potential for providing innovative ways for children to play, learn and exercise (Price et al., 2003; Bekker et al., 2014), they have not been explored much with adults and in particular older adults.

A number of tangible urban play artefacts have been developed, which offer playful experiences. These focus on encouraging exploitation and discovery of urban spaces in a leisurely and playful manner by connecting the digital (mobile phones with wireless network technologies) with the physical world (e.g. building, city landmarks) reporting positive results in increasing people engagement with such experiences (Iguchi & Inakage, 2006; Rashid et al., 2006; Vogiazou et al., 2006). Romero et al. (2010) have employed playful experiences targeting older people in care home facilities showing promising in user engagement of physical activity.

In the city of Bristol in the UK, the Watershed -a social enterprise and a registered charity- has developed in collaboration with other civil and technology partners, the world's first playable city, a framework to think differently about the city, generating a social dialogue by creating shared experiences through play (Watershed, 2015). Although Playable City does not place a focus in health it provides an interesting example of adult user engagement through tangible playful interactions in an urban environment (de Lange, 2015).

Other projects focusing on playful designed artefacts for health include the Kwiek and the Piano Staircase. Kwiek is an urban exercise route implemented around an elderly care facility de Eerdbrand in Eindhoven, in the Netherlands, aimed at healthy ageing (Kwiek, 2013). It uses existing and other specially designed street furniture/infrastructure. For instance it turns a lamppost into a spot to stretch shoulders, a bench into a place to exercise your legs and bollards to slalom around. The specially designed symbol tiles on the pavement mark where and what kind of exercise one could perform directing users to the next exercise and communicate the whole route. Although no formal study of the effectiveness of the route has been reported in the literature it forms a useful example of how street infrastructure can be turned into a playful tool for supporting exercise for an ageing population.

In the Staircase piano the stairs of the metro station Odenplan in Stockholm, in Sweeden, were transformed into a giant functioning piano keyboard - much like the piano made famous in the Tom Hanks movie Big (1988). Applying pressure on each step played a musical note. This playful artefact encouraged commuters to opt for the intriguing new stairway and enjoyed making musical movements as they ascended up and down the scale and facilitated social interactions along with physical exercise (Peeters et al., 2013). Volkswagen, which funded the project found 66% more people than normal chose the musical stairs over the escalator (Bates, 2009). However no information on the evaluations study and the sample size was given.

In light of the above, it emerges that there is a great and growing potential for playfulness to be employed as a critical lens in the design (playful design) of tangible (physical-digital) artefacts and interventions for engaging people and especially an increasingly ageing population in ageing well through taking more physical exercise and socialising in urban environments in a leisurely manner.

Although only a handful set of recommendations have been offered for the design of playful experiences and interactions, all of them focus on the design of playful experiences for children and most are provided purely for the purposes of entertainment (Korhonen et al., 2009; Shackell et al., 2009; Bekker et al., 2014; Tieben et al., 2014).

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[2] See http://www.engadget.com/2015/01/15/people-love-nintendo-amiibo/ Last accessed 12 October 2015

The following section presents a single case study, which has employed playful design in co-designing playful tangible artefacts for engaging older people in taking exercise and in co-creating with people (Active Parks[3]).

The Active Parks Case Study

Background and methodology

The Active Parks project (March-September 2014) aimed at co-designing a concept for a playful and interactive 'health trail' in a green space to explore the effects of playful interactive experiences on the casual physical activity of park users, in Ryelands Park, in Lancaster, in the UK. In a series of co-design workshops (n=25, age=40-70, average age=60) with local residents, the Lancaster City Council and NHS Lancashire Public Health, a numbers of ideas and concepts were developed, which informed the design proposition of the health trail offering new ways of motivating and taking physical activity specific to local people in their park. Active Parks employed a co-design process (Sanders and Stappers, 2008) along with along with qualitative research ethnography methods (namely observations, interviews and focus-groups) for data gathering. Interviews were conducted with project stakeholders (n=3), workshop participants (n=5) and user testers (n=12) of the two prototypes developed. Thematic analysis was employed for data analysis (Gibbs, 2007), where all data collected are involved in a process of identifying themes throughout coding, indexing, and categorizing towards drawing themes.

During the second co-design workshop the data was grouped and themes emerged (presented in the next section) and finally synthesized by the workshop participants into a shared vision: *'A community space with fun and activities safe for everyone to enjoy.'* This vision was the guiding force behind the ideas generated and the rapid prototypes created by the end of the second workshop.

The team selected to realize the 'xylophone' concept put forward by participants. The selection was made as it was felt that the idea represented a single interaction that could be part of a larger series of interactions as part of a 'health trail'. It also encompassed all the key values and themes identified by co-designers in the workshops and enabled shared play, tactile and audio stimulation (see Figure 1).

Two proof-of-concept prototypes were realised to illustrate the possibilities of playfulness in engaging people with physical activity in public urban spaces and explore further how it could be used and implemented in public urban environments.

Both prototypes were built at large scale and employed conductive technology. The first prototype was constructed with a mobile Near Field Communication (NFC) interface and a conductive touch interface based on a MaKeyMaKey[4] microcontroller. The touch interface allowed people to play the prototype like a music instrument (see Figure 2). For the mobile interface, users could choose to play freestyle or follow the mobile instructions that indicated which numbers to tap next (see Figure 3). Using this function with the mobile phone, users could play the notes for "Twinkle, Twinkle Little Star".

The second prototype was developed based on the feedback received from the testing of the first prototype. This time the NFC interface was dropped and only the conductive touch interface was used. Copper was employed as an alternative conductive material. The form of the prototype gained more attention this time and a free standing structure was designed and built incorporating a wooden frame as the base, 13 copper pipes for conductivity and to case the wires and 13 acrylic globes cover with some copper tape used as the touch elements. LED lights were added and they provided visual feedback in addition to sound when users touched the interface (see Figure 4).

The two prototypes were pilot tested and evaluated on site Ryelands Park (n=150, age 4-80), and in Lancaster city's central square (n=350, age 2-80).

[3] See http://imagination.lancs.ac.uk/Active_Parks
[4] See: http://www.makeymakey.com/

Findings and Discussion

The co-design activities carried out identified key values for the project. Those issues highlighted the importance that the interactive health trail followed those values and enabled the local community to engage in exercise in a playful manner. Ten key themes have been identified from the analysis of the focus group data and workshop activities. These are: playfulness, intergenerational, shared activities, social interaction, local engagement, community friendship, physical wellbeing, outdoors exercise, a sense of fun, showcase to others.

Enjoyment and *playfulness* was considered as a key contributor to engaging people in the first place and to keeping the motivation going.

> *"Well you often find playgrounds for children in parks, why don't we build a fun trail for park visitors too, that takes you from one activity to the next but it's not one of those outdoor gym equipment..you know the ones I mean.. every activity it's like a game you play.. but you have to move to keep playing"*

It is interesting to note that there was a shared feeling amongst participants that the interactive trail should not be presented as a health intervention but as a playful activity linked to leisure. The idea of an adult playground became popular. Participants referred to games, fun and play and presented examples of activities from their childhood that combined play with exercise, such hopscotch, skipping ropes, ball games and treasure hunt. All these activities have several common characteristics such as physical exertion, interaction with tangible play objects and simultaneous stimulation and engagement of several of our senses. As the discussion developed a concept emerged for a large playful musical instrument situated in the park. This concept was taken further by participants and developed into a tangible artefact.

> *"Music is what can bring all together..I mean we listen to different type of music but still it is something in common we have and can learn from each other...imagine a large musical instrument in the park."*

Music was proposed here as a tool for collaborative play and multisencory interaction that can be facilitate through large musical play object in a public space.

Thematic analysis was also employed for the data analysis emerging from the prototype testing. The main themes that emerged were: *playfulness is ageless, multisensory experiences, play together, fun and joy; explore and experiment, toy for adults, inclusiveness, connectedness, inclusiveness and music and lights*.

The first prototype tested both a conductive interface and an NFC based interface, the lack of responsiveness with the phone as an NFC reader made the experience cumbersome, participants preferred the immediate feedback and tactile sensation of the conductive approach. It was observed that by using their hands when interacting conductive interface of the xylophone users could concentrate more in the play activity and engage their senses of touch, sight and hearing equally and in an co-ordinated way as opposed to focusing on a mobile phone screen. The sense of touch (touching the painted hands on the xylophone to play music) seems to be very strong and well explored by participants of all ages.

> *"The mobile is good if you want to play on your own and test your speed..but only one can play at a time and is not as much fun as using your hands"*

Participants also commented on the collaborative affordance of the conductive approach of interacting as opposed to the solo mode of the mobile interaction. Users who had not

previously met explored the prototype together linking hands to create conductive human chains. Again connecting with the play object, music but also other people through physical touch was highlighted by users and observed by the research team.

> *"Absolutely love that you can join hands and play together. This way you can reach more notes faster and is much more enjoyable!"*

Each of the prototypes showed that the simplest of playful interactions appear to stimulate casual physical activity among a wide range of users, and in addition observation of usage indicated that they might offer opportunities for interaction. The theme of play, playfulness and fun kept coming in both the interviews but also feedback left by participants at the graffiti walls (see Figure 5). This was linked by several people with exercise and stretching. It is also interesting to note that a desire for ease of playfulness over exertion was evident amongst some users. This led to the artefact being referred to by users as the 'musical bench'.

> *"What a great big toy! So fun and exciting to play with. Have to be quick and stretch through to play an entire song"*

The importance of music was also highlighted by several participants, linking it with motivation for exercising and as an inspiration tool for more play and discovery. The playful interaction acted as a leveller with even accomplished musicians finding the musical element challenging but fun. The aesthetic was viewed as surprising and unusual.

> *"Excellent for full body movement while having the advantage to create music"*

The value of the sensory interaction which encompassed lights and touch along with music was a feature that users of the first prototype requested and users of the second one commented on.

> *"It would be nice if it had lights for me to follow and play music"*

The second prototype developed the concept to include motivating feedback from lights and a new physical design that acted as a bench, light source and activity in the park space. Participant request for a visual feedback, along with the audio and tactile feedback indicates the value of multisensory engagement for play. Participants also provided ideas for turning it into a more playful artefact. Several of these suggestions revolved around a musical 'Simon says' type of game, whereas one player will play several tunes in turn whilst the other person will have to recall and replay them increasing the number of tunes and cover the distance each time. It was also observed that in the second prototype that included the lights several participants created their own playful adhoc games where a player would have to follow the sequence of lights the previous person played.

> *"Cool to play tunes, listen to them and see the lights go on as you play"*

The value of multi-play and collaboration through physical connection was another theme that emerged. This did seem to increase user engagement and provide a heightened sense of joy.

> *"I think it was nice that we could do it together..hold hands with somebody and make the tunes together"*

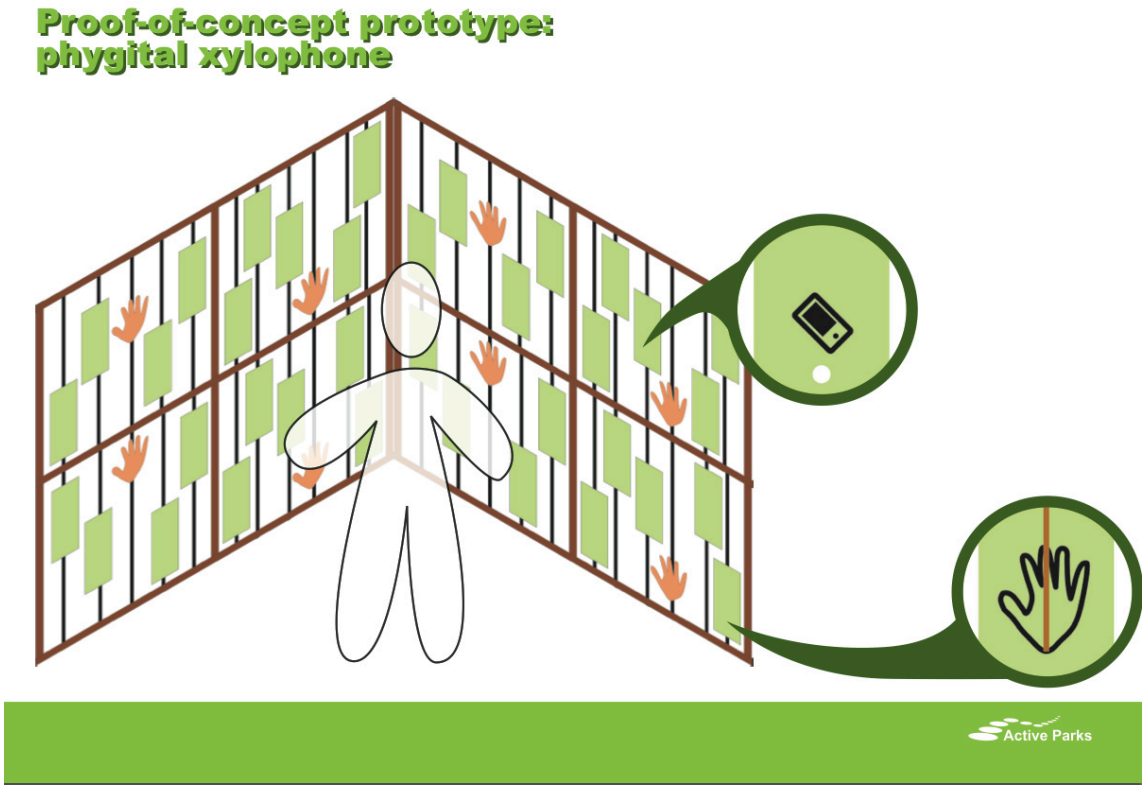

Figure 1. The initial design proposal of the xylophone playful artefact as a result of the co-design process and data analysis

Figure 2. Users interacting with the conductive touch interface of the xylophone, by putting their fingers or hands on the conductive painted touch points

Figure 3. User interacting with the mobile (NFC) interface of the xylophone by touching the phone on the artefact

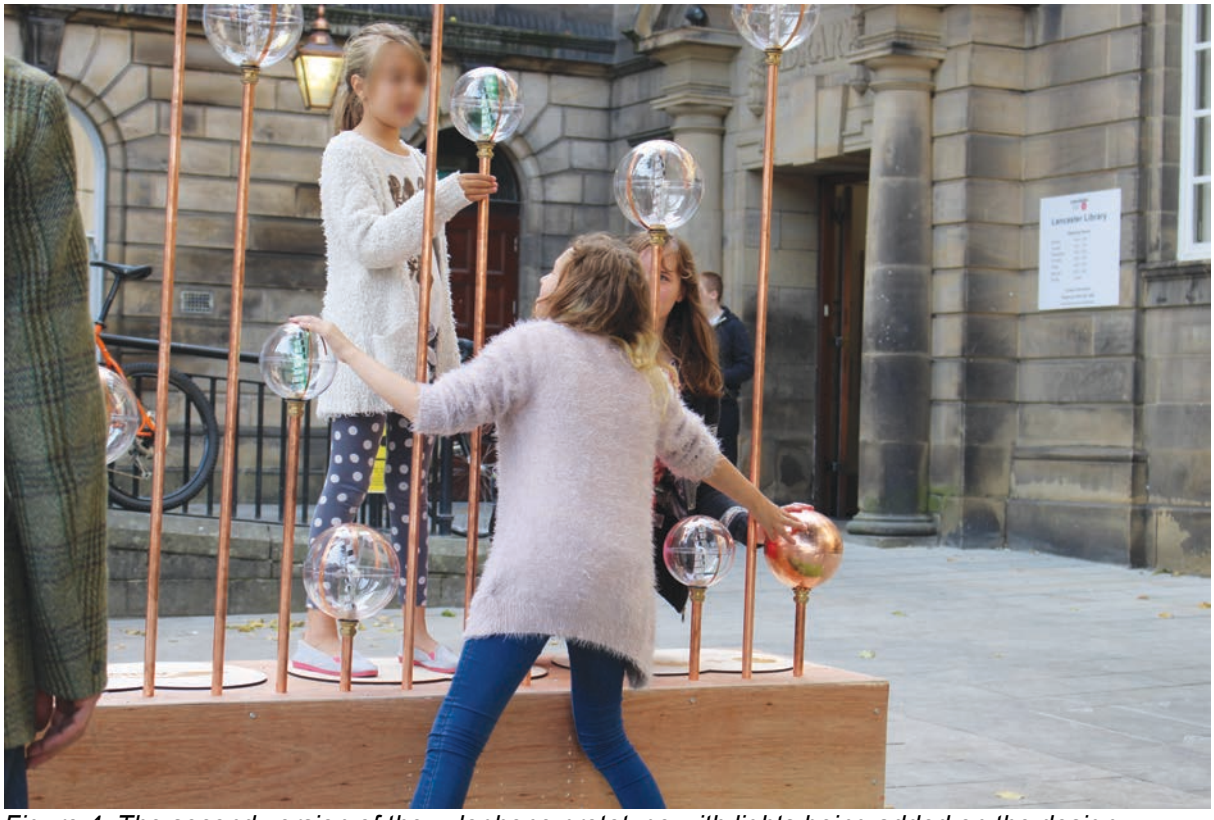

Figure 4. The second version of the xylophone prototype with lights being added on the design

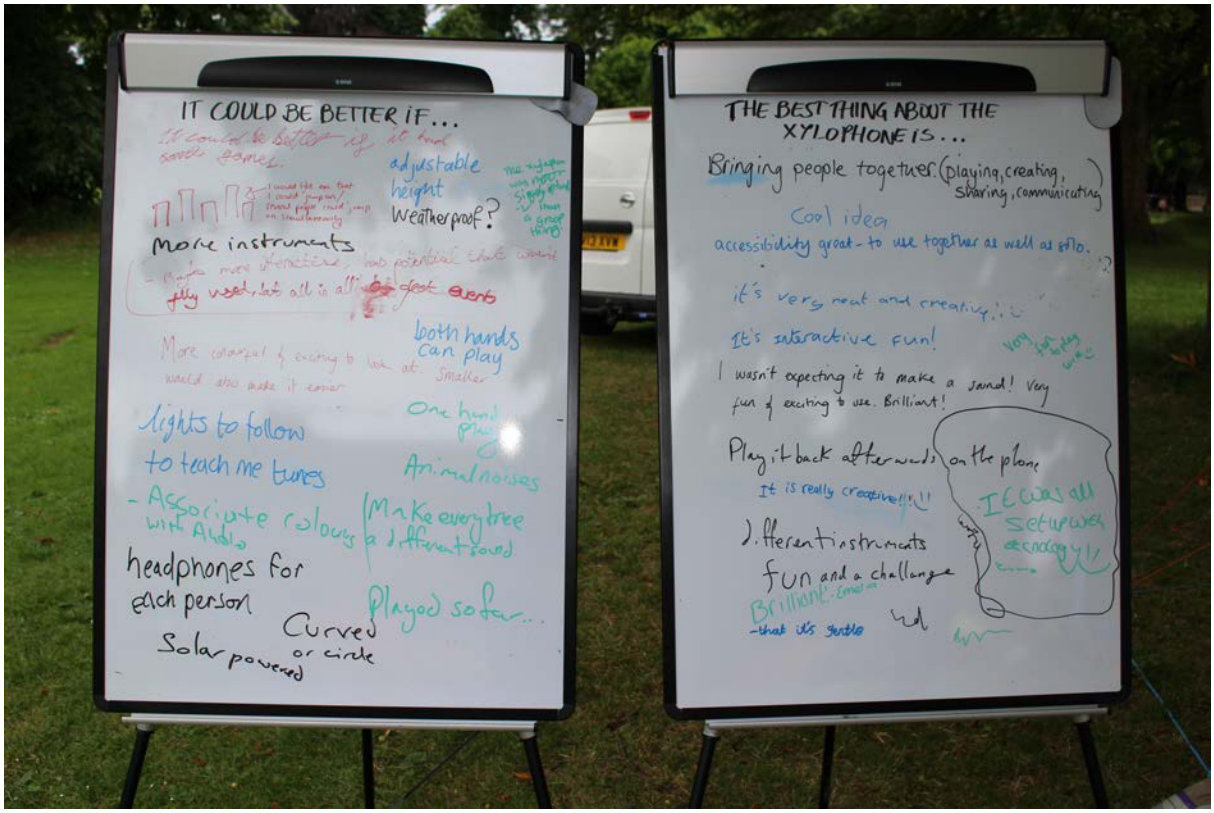

Figure 5. Using graffiti walls to collect user feedback during the user tests in a creative manner

Recommendations and Discussion

Based on the findings, the themes that emerged and lessons learnt from the Active Parks case study, as well as the review of the literature on play and playfulness, we present and discuss three core values and eight associated recommendations for the design of playful experiences in design for public health and for ageing well.

Value of Playfulness - A key to increasing movement

There are fun ways of keeping active and playfulness is a key in engaging both sedentary and older people in casual physical activity. Exercises which are incorporated within a playful environment (an interactive toy or artefact) can greatly increasing people's physical exertion through multisensory stimulation. To maximise people's engagement with physical activity and exercise it is important that fun and play is highlighted and that the artefact is not only designed but also presented as a play and leisure activity rather than a health or medical related intervention.

Recommendation (Rec) 1: Emphasize fun and play experiences over health/medical intervention

Such experiences can be made more enjoyable through multisensorial interactions that involve touch, audio and vision. Being able to offer several sensory experiences will further *captivate* user engagement and increase the sense of *joy, sensation and thrill* (Korhonen et al., 2009). Shackell et al. (2009) also highlight the value of engaging users with as many of the five sense as possible and through natural and fabricated material. Having artefacts designed at a large scale is important in order to facilitate and encourage moment and

physical exertion (see Figure 6). As movement (upper/lower and/or full body) is the key here; the size and scale of the playful artefact should be carefully designed to embed motion as a core element in the experience of play. Advice should be sought at this stage from health professionals and selected movements/exercises incorporated in a playful manner. Rewards for movement (especially large more complex ones) should be given through the provision of multistimulus feedback, including, visual, audio and tactile ones.

Rec 2: Aim for large-scale multisensory designs and provide multistimulus feedback

Figure 6. The large scale of the artefact requiring even the tallest of users to move and stretch

Key facilitators for play are generative artefacts or toys; these are play activities and experiences that are open to, and encouraging for the creative expression of their users. Unlike games that are very structured and every possible choice and interaction is well defined by designers, play activities and toys are generative and open-ended. There are several options and paths that the user can explore. This encompasses several important values for the design of successful play experiences for public health.

First of all being generative means that users can create their own rules and games for play, therefore discovering each time a different experience and hence being encouraged to revisit and keep moving/exercising. Bekker et al. (2014) refer to this as open-ended play and Tieben et al. (2014) describe it as emergent play. For instance the generative design of the xylophone artefact in Active Parks encouraged user to invent and play their own games of 'Simon says', 'follow the light', etc (see Figure 7).

Secondly being open-ended means that the game or play experience is never truly over unlike a game where you stop when you reach a win or lose condition. It is up to the player(s) to decide when to stop and come back again to continue or switch to a newly created game very much like a toy where children make up different play rules.

Thirdly being generative facilitates creative expression and generates additional feelings of sensation, accomplishment and pride in oneself. In the case of Active Parks, audio was employed as the element that facilitated creative exploration of music generation.

Rec 3: Make play open-ended, generative and explorative very much like a toy

Figure 7. Users creating their own rules and games when playing with the artefact

Offering an external reward for an activity (such as vouchers, points, etc.) provides a strong social signal that the activity in question does not worth doing for its own sake. For example if engaging in exercising for a specific amount of hours lowers your health insurance premium or entitles you to a shopping voucher creates the misconception that exercising is a chore not worth doing for its own sake. One of the key differences and benefits of play versus games is its focus on an internal rewards system, which arises from the positive emotions that emanate from engaging in play. Such emotions, such as spontaneity, joy (Barnett, 1990) enjoyment, curiosity, social interaction (Kuts, 2009) discovery, relaxation, sensation, thrill (Korhonen et al., 2009), challenge, exploration, expression, fantasy (Kuts, 2009; Korhonen et al., 2009) and humour (Barnett, 1990; Korhonen et al., 2009) should be augmented throughout the design of the playful artefact to tap into intrinsic motivation.

Rec 4: Aim for intrinsic rewards and tap into users intrinsic motivation

Value of Inclusiveness - Fun ways of keeping active for all

The second value is very important and a prerequisite for aterfacts and interventions aimed at being installed in a public urban environment setting. As such artefacts are aimed at being made available in public spaces they should be inclusive and accessible by everyone who uses the space. They should not cater for a specific age group and their interaction affordances should cater for participation by everyone. This is where the technology and interaction mode utilised should be made very easy to use and ideally without the need to read instructions. Again provision of different types of feedback can augment this. This is an opportunity for the designer to create a link between the play and spaces. This can be incorporated in the design of the artefact that creates a visual or cultural link with the place it is being installed or the play experiences it offers.

Active Parks employed conductive technology for engaging with the artefact as it was seen as a more natural way of interaction and it also meant that it was cheaper to implement

and everyone in the park could use it with little or no instructions. The mobile interaction was dropped during the design of the second prototype as there are issues around accessibility, since not everyone in the park owned or was confident in operating a smartphone.

Rec 5: Link spaces and play and make it an inclusive design through tangible play

Currently the vast majority of playful experiences and activities available in public spaces are aimed mainly at young children. As discussed in the related work sections above the evidence provided by the literature (Staempfli, 2007; Proyer 2014a; Proyer 2014b; Mahdjoubi and Spencer, 2015) highlights the benefits and importance of playfulness for adults and for ageing well. In addition to the literature the Active Parks case study revealed that playfulness is ageless and in fact the older the user the more they will be immersed in play (see Figure 8). Data from the interviews, observations and graffiti wall provided a clear suggestion of the value of playfulness for adult and older users in terms of engagement, social interaction and a tool for escape and release from the realities of daily living.

Rec 6: Remember that playfulness is ageless

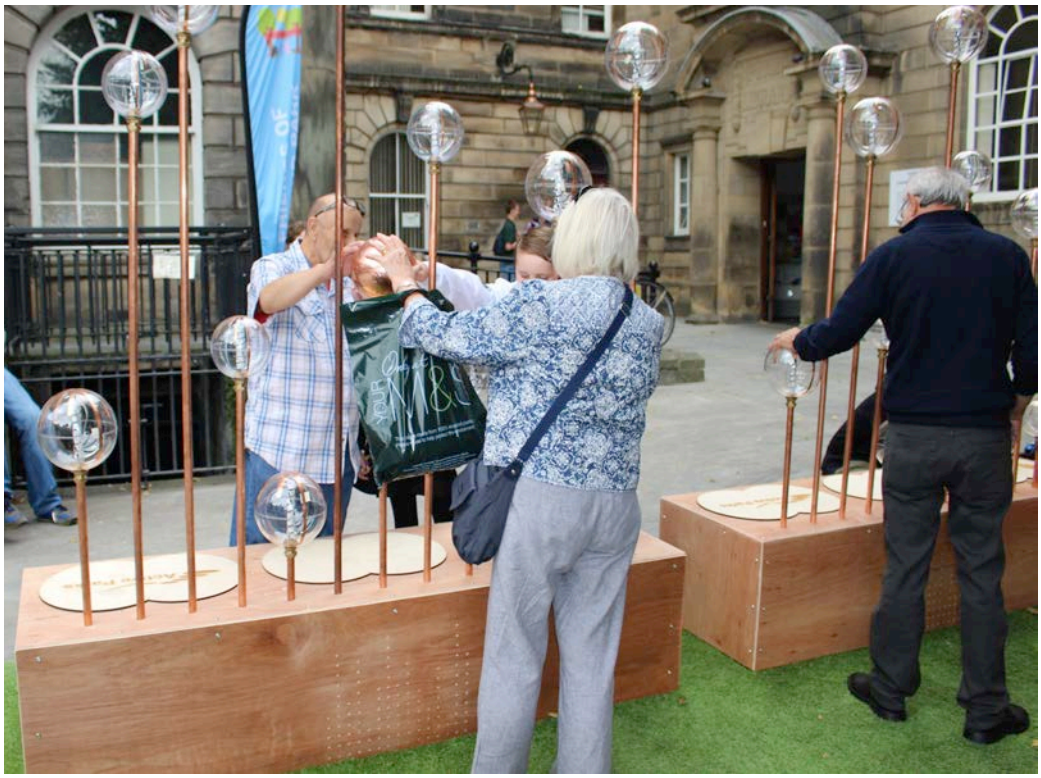

Figure 8. Playfulness is ageless, the older the users the more they engage with play

However designing playful experiences and activities that would successfully engage adults and older adults in a public setting is much harder when compared to designing for children. A key prerequisite for engaging in the first place and then immersing in play is the creation of what is known as the 'magic circle' (Huizinga, 1964) in which players may feel safe, resourceful and empowered within that moment and space of the game (Salen and Zimmerman, 2003). The concept of 'the magic circle' can be gathered from the way young animals and kids engage in play too. They play when they see their parents around monitoring the environment, thus taking care that no outer threat is present.

In Active Parks for instance this was achieved through both the visual and aesthetic design of the play activity, which portrayed a level of both play but also science (through the lights and copper structure). In addition to this the use of the synthetic turf grass around the

artefact (see Figures 7 and 8) created a visual signpost of the play space where engaging with play activity was expected and the norm and a safe place to do so creating the 'magic circle'. Once people where in that space they were expected to engage in play and felt safe as everyone else was doing the same without the fear of criticism or ridiculing oneself although this was placed in a public space.

Rec 7: Create a 'magic circle' and a safe space for play and exploration space

Value of Connectedness – Bringing people together

Having an artefact designed for a public space provides the designer with a challenge and an opportunity for creating new and enhancing existing social interactions. Connectedness forms one of key values for humans, as we are social beings. Play is an inherently social activity. Facilitating social interactions is a key pre-requisite for successful play space design (Shackell et al. 2009). Following these two principles it is crucial for the design of play activities designed for open urban and public spaces to include artefacts that embed the value of connectedness.

This can be manifested both in terms of physical buts also cognitively and emotionally. The former can be accomplished through the design of tangible artefacts that have affordances and employ technologies that encourage and require physical connection for play; for example in Active Parks the use of conductive technology and the placing of play elements further apart facilitated and up to a point necessitated the need of physical touch for play (see Figure 9). In terms of the latter this can be achieved through the design of the play activity where collaborative play reduces cognitive load and increases feelings of sensation, fellowship, sympathy and accomplishment.

Rec 8: Design tangible artefacts that embed the value of connectedness by offering affordance for connecting people together (physically or through play)

Figure 9. Encouraging connectedness through physical touch and play

Conclusion

Although there is a lack of research in the area of playfulness in public health and for ageing well, this field is gaining momentum. The benefits of play and playfulness in increasing our wellbeing, social interaction and ageing process have been discussed in this chapter. A case study has been presented, providing guidance on the design of tangible playful experience for health and ageing well in public urban places. The lessons learnt from the case study as well as that of the literature review have led to eight practical recommendations for the design of playful experiences for public health. These have been encompasses within three core values.

The first value provides recommendations related to the core qualities of play and how to implement these into a designed ludic artefact; the second one highlights the value of inclusiveness in the design of playful experiences for health in public spaces; the third value offers two recommendations on how to connect and bring people together through tangible play.

We also conclude that several of the pre-requisites that are defined by Shackell et al (2009) in the Play England report although aimed at the design of successful play spaces for children can be applied to adults with some level of modification.

This is the first paper to propose practical recommendations for the design of playful experiences and activities for public health and for ageing well. We envisage that this would form a basis of guidance and inspiration for designers, communities and health professionals who wish to employ a playful lens for the adoption and promotion of physical activities in public and urban spaces.

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