Exploring the relationship between the residential built form environment and mental wellbeing

Judith E Montford
Heriot-Watt University
jem25@hw.ac.uk
m. 0790 357 4507, t.0131 451 4601

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Abstract
The built environment has a role to play in determining human health and this is not just through the provision of health services, there are other ways. It is important to understand that health is not just about the absence of diseases but it is also about having a complete state of physical and mental wellbeing. There is a growing interest in promoting this aspect of health by built environment professionals. It has been established that there is a relationship between the residential built form environment and mental wellbeing and there are a number of ways in which this relationship is formed. One of these ways is the opportunity the residential built form environment provides for residents to socially interact with each other. Positive social interaction is identified as one of the main influences on positive mental health and wellbeing. Notwithstanding the use of open spaces, parks for play, community centres and such facilities for social interaction, residential environments come in different patterns, layouts and densities and these also influence interaction among residents. The physical design of a place may provide opportunities for residents/people to; interact either frequently, conveniently or not, build relationships and engage in various forms of social activities as a result of using the ‘arranged’ built form environment i.e. in terms of patterns, layouts block types.

This research explores how the residential environment generates this resource which is known to be good for mental wellbeing. The research therefore looks at how the different residential built forms blocks, layout and patterns at the street level urban form in Scotland - Edinburgh (selected areas) influence positive social interaction with the notion that this is good for mental wellbeing. In doing this e-data collection methods which is SMS data capture among other methods have been adopted to help in exploring this relationship. This method allows spontaneous and ‘spur-of-the-moment data on social interaction between residents to be collected. It also allows a spatial analysis to be made on how residential built form spaces and places are used. This information is useful as it will give planners an insight into how ‘day to day real life’ social interaction happens rather than an account given of it through traditional methods of data collection which might miss out on real happenings. This is useful for planning for social sustainability an essential theme in planning for resilient environments.
which is the agenda in spatial planning practice at present and for the future. This paper explores this aspect of planning for resilience in the quest to plan for sustainability.

Introduction

Health is not just about the absence of diseases but it is also about having a complete state of physical and mental wellbeing. There are therefore other ways of tackling health problems than by the provision of health services. There is a growing interest in creating health promoting environments by built environment professionals due to the great potential the built environment has in affecting human health.

This paper will discuss one of the softer ways of promoting healthy environments which is through the promotion of social interaction, i.e. the opportunity the residential built form environment affords for residents to socially interact with each other. Positive social interaction is identified as one of the primary influences on positive mental health and wellbeing. Notwithstanding the use of open spaces, parks for play, community centres and such facilities for social interaction, residential environments come in different patterns, layouts and densities and these also influence interaction among residents. The physical design of a place may provide opportunities for residents/people to; interact either frequently, conveniently or not, build relationships and engage in various forms of social activities as a result of using the ‘arranged’ built form environment. This research explores through a number of inventive data collection methods among some known traditional ones, how the residential environment generates social interaction which is known to be good for mental wellbeing.

Mental wellbeing and the built environment

The association between urban structures and inhabitant’s health and wellbeing (among other things) is at the centre of people – environment research (Kytta, 2011). The past few years has seen an interest in the relationship between urban form and health and wellbeing in the UK (Burton and Sheehan, 2010, Jenks et al., 2010, Bramley and Power, 2009). Health is not only the absence of disease but is defined as a state of complete physical, mental and social wellbeing (WHO, 1948). This concept of health as not just the absence of disease is comprehensively explained in the area of positive health and psychology and this focuses on betterment or burgeoning of the individual (Guðmundsdóttir, 2011). With regards to positive health and psychology which includes mental wellbeing, Kruger (2010) and Cooper et al., (2008) list the following as important in the description of mental wellbeing; -positive experience of the individual; fitness of the mind and spirit'; individual realising his or her own abilities; dynamic state in which the individual is able to develop their potential. The common factor in the definitions is the ability of the individual to take control of their mind which therefore enables them to function well in society. Mental wellbeing differs from mental ill health. In the latter is a ‘behavioural deviation’ from the norm which is expected of the human being in society (Edwards, 1981) and this applies to a minority of the general population (Bond et al., 2012). Mental wellbeing might not just be the absence of mental illness but rather it is, as mentioned, the art of staying well in the mind and functioning well in society in the mists of all stresses and life’s issues (MacDonald and Widdas, 2001).

The residential built form has the propensity to affect this positive health and psychology and mental wellbeing of residents through a number of ways (Guite et al., 2006, Evans, 2003). One is social capital. In this study, social capital is the subject of interest with regards to exploring the effect the residential built form has on mental wellbeing. Social capital has been identified as one of the main influences on and of positive mental health and wellbeing (Kawachi and Berkman, 2001, Frumkin et al., 2004, Clark and McCann, 2003, Barton, 2005, O’Campo et al.,
It is described as the ‘connection among individuals-social networks and the norms of reciprocity and trustworthiness that arise from them’ (Putnam, 2001) pp19. It is also about the associations’ people make and the relationships they build by virtue of the opportunity to communicate with others. There are a number of components of social capital and one of these is social interaction. This study intends to measure mental wellbeing though the pathway of social interaction. Before discussing anymore on social interaction it is important to understand how mental wellbeing is measured and how well social interaction can be used as a factor to measure mental wellbeing.

In measuring mental wellbeing, a balance between the positive and negative emotions is therefore advised as the best way to assess an individual’s overall mental wellbeing. Negative and positive emotions are necessary and the ability to manage it leads to optimal wellbeing (Schiffrin and Nelson, 2010, Diener, 2000, Lyubomirsky and Lepper, 1999, Folkman and Moskowitz, 2003). To add to this, it is argued that there is a neutral state of emotion which is reached and people adapt to a new either improved or worsened condition over time and therefore reach a neutral state of emotion (Fredrickson, 2002, Diener, 2000). This is the theory of adaptation. From this argument there is a challenge, adaption will continually neutralise issues and these factors that are pursued to enhance positive health and optimization. Also the different types of human/individual personalities affect the way in which people adapt to or react to situations. This implies that the measurement of positive health – mental wellbeing for that matter may be impossible. Becker et al., (2010) argue that based on the adaptation theory, factors that continuously improve health should then be pursued. Therefore the question then is, can mental wellbeing be effectively measured and can optimal health be achieved when the adaptation theory is considered? There are a number of different but in context similar ways in which mental wellbeing has been measured. They are commonly measured and assessed with self-reported measures. These measurements vary in issues like the timeline used for the assessment and the details of questions asked as well as the number. However they are all subjective accounts of a person’s experience either at that time or over a period. The objective way in which wellbeing is measured is through the observations of verbal and nonverbal behaviour, actions, biology, attention and memory. The self-report measurement tools however dominate the assessment of mental wellbeing. The subjective measures are reported to be reliable when used in conjunction with objective measures. Coupled with the objective measures they are able to give a more comprehensive account of a person’s wellbeing (Diener and Ryan, 2009).

Associating with people has been identified as one of the most defining factors which contribute to people’s mental wellbeing. Perhaps more the case as it projects a person’s behaviour in the way he/she relates with others and the ability to get along with them in a ‘satisfactory’ manner. It is an item of this is often incorporated in tools used to measure mental wellbeing. The Warwick-Edinburgh Mental Wellbeing Scale developed with NHS Scotland is a tool used to measure wellbeing. This tool has some items which ask questions about how close people are to others or if they feel interested in other people (Tennant et al., 2007). This is a subjective measure but however subjective being connected with people has been identified as a correlate to high life satisfaction and happiness (an aspect or other form of mental wellbeing) (Kahneman and Krueger, 2006). Close and personal relationships and trust and belonging are also described as essential aspects of a person’s wellbeing (Skilton, 2009). There is a considerable amount of literature discussions on the health benefits of these social relationship on health and wellbeing (Marmot, 2005); (Ochieng, 2011); (Kawachi and Berkman, 2001). This possibly warrants this concept as being good to measure mental wellbeing.

Looking then at term social interaction, it has been considered as the basis of human behaviour (Becker, 1974). As such it can be described as the building blocks to connections and networking. Social interaction in literature describes people associations and relationships
and is an act which involves a relationship between people. Rummel (1976) defines social interactions as “acts, actions, or practices of two or more people mutually oriented towards each other’s selves that is any behaviour that tries to affect or take account of each other’s subjective experiences or intentions”. The ‘taking account of each other’s subjective experiences or intentions’ requires that the actors involved in the interaction should be aware of each other. There should be a mutual orientation towards each other. This requires a great deal of mental processing. Rummel (1976) adds that this mutual orientation should be reciprocated to make it an ‘interaction’.

Social interaction in the built form
This interaction can happen in a physical place setting, or non-physical setting, therefore any ‘space’ (any bounded scenario, milieu or dimension in which an exchange between actors happens). The type of interaction of interest however is that which happens in the physical places as the way we, interact and relate with each other has a strong relationship with the space environment we live in. This means social interactions that have been developed mainly out of the physical built form design features. For example, fence conversations, garden conversation, communal/shared space interactions and meetings, porch greeting and exchanges, stairwell conversations, is of particular interest in this study. As noted our interaction with each other can be influenced by the physical arrangement of space though this is guided by social circumstances (Willis et al., 2010b). Therefore the physical design of a place may provide opportunities for residents/people to; interact with each other or in groups either frequently, conveniently or not; build relationships and engage in various forms of social activities with others as a result of using the ‘arranged’ built form environment space (Bramley et al., 2010).

Social interaction possibly is the best element of social capital used to describe encounters and meetings between people which have been influenced by the layout of the residential built form. There are compounding factors which might affect social interaction within a neighbourhood apart from design features. One is the length of time a person has lived in an area and how this affects the formation of friendships/relationships and then differences in personalities and the willingness to interact. However the use of the residential built environment for necessary, social and optional activities might reveal certain patterns of interaction among people which might not be affected by time and differences in personalities (Whyte, 2010). Good design features of the built form environment will always create a social atmosphere (Ortega-Andeane et al., 2005, Gehl, 1987, Whyte, 2010). Hence the need to still explore how this happens within the residential built form environment.

Interaction influenced by the spatial arrangement of the residential environments built form elements can occur in a variety of settings when certain principles are applied for example - functional and physical distances. Other factors include the following; Space – the arrangement of private semi-private, public and semi-public spaces, and the availability of user friendly spaces that can be used by a variety of people and for a variety of uses is another factor (Gehl, 1987, Gehl, 1986). Configuration - for example the way entrances to houses are positioned to each other or to major pedestrian routes streets and meeting areas; position of focal points; arrangements of outdoor furniture; living on higher or lower traffic residential areas (Appleyard and Lintell, 1972, Evans, 2003, Wilkerson et al., 2012). The nearness of structures in a housing development in terms of the density of the dwellings per hectare also creates opportunities for casual informal contacts between residents. This is also the same for variations in the densities of people. Where it is higher - (increase in pedestrian areas or of the public realm) it is said to increase social interaction, though not always favourable (Abu-Ghazzeh, 1999, Williams, 2005, Gehl, 1987, Tibbalds, 2006, Barton et al., 2010, Yancey, 1972). There is clearly a connection between the built form arrangement and social life – social
interaction. However, the way in which physical planning i.e. physical built environment influences wellbeing and positive health through the social life (a resource for tackling positive health) is an under-researched area. The next few paragraphs will explain this.

The problem

Social interaction is influenced by behaviour (Goffman, 1966). Where the built form influences behaviour, which affects mental wellbeing it is said to have an indirect influence (Evans, 2003). This indirect impact is challenging to explain and research in this area is limited (Evans, 2003, Kytta, 2011, Burton, 2010). Studies on how the spatial arrangements of residential areas affect social interactions have been carried out in different countries including England (with emphasis on co-housing(Williams, 2005)) (Abu-Ghazzeh, 1999, Williams, 2005, du Toit et al., 2007, Rogers et al., 2010, Appleyard and Lintell, 1972, Yancey, 1972, Bramley et al., 2009, Bramley et al., 2010). The above studies have examined interactions within different residential urban spaces – streets and housing blocks. In terms of context, very few of these studies have been conducted in the United Kingdom regarding people’s interactions within the residential built form environment (Jenks and Jones, 2010, Bramley et al., 2009, Williams, 2005).

For one of the most relevant study to this research, social interaction has just been an aspect of the examination of social sustainability (Bramley et al., 2010) within the residential built form and therefore has not sufficiently delved into the details of how interaction happens at block level and its associated layout and patterns of the residential built form. The other most relevant study to this study in terms of context examines how social interaction happens within co-housing in England and not within conventional residential dwellings pertinent to Scotland’s particularly (Williams, 2005).

In all these studies, an attempt has been made to measure social interaction

These measures assess more of relationships that have developed within the residential built forms. However according to the definitions of social interactions it could be simply striking an acquaintance, acknowledging people and this, is enough to be classified as social interaction. There are more acceptable measures where items such as, the ‘frequency’ number of people one has met/recognises/know by name/chat with/visit/ have been used and these are the building blocks to deeper relationships. It is believed that a better approach to measuring social interaction could have been used than a narrative being given of interactions. In other studies so far there has been a lack of objective approaches to effectively measuring social interactions which if coupled with subjective measures could give near accurate accounts of this concept.

Over all, the findings of these studies abroad and in the UK are not particularly consistent in terms of stating which built form type is useful for social interaction. This has been blamed on methodological problems. However in this inconsistency there is a message that – medium density dwellings are better for social interaction. What is not known is exactly how social interaction is happening and also how useful it has been for mental wellbeing. Also no study has yet been identified which looks at how the different residential built form blocks, layout and patterns in Scotland affects social interaction. This is how it is happening which a qualitative investigation will reveal. This research attempts to do this investigation at the residential block level where it is implied is the most effective to study human behaviour (Rogers et al., 2010, Bramley et al., 2010). The next paragraphs will discuss the aim of the research and the approach taken to undertake this investigation.

Aim and Objectives
The aim of the research study is to examine how the use of the different residential built form affects social interaction which is good for mental wellbeing. To achieve this aim, the research has adopted mainly qualitative methods. The qualitative data has been collected and is yet to be analysed to further explain how health benefiting social interaction is generated. This is a subjective approach with the aim of obtaining a deeper understanding as well as to ‘build up a clearer picture’ which explains the how and why the built form influences people’s interactions and how these interactions help with our mental wellbeing (Bramley et al., 2010, Green and Browne, 2005). The following objectives have been established to achieve this aim;

- To develop a conceptual model of the theories to explain the relationship between mental wellbeing and social interaction.
- To explore how and why the residential built form layout and pattern has been produced.
- To examine the concept of social interaction and how it is linked with -the built environment
- To explore, how social interaction happens within the different residential built form from space use.
- To evaluate, how social interaction generated from space use within the different residential built form types affects mental wellbeing.
- To draw conclusions on residential layouts and their impacts on social interaction and then recommend to planning practice, design standards which promote healthy places.

Research Design
The next few paragraphs will discuss the strategy adopted to help achieve the research aim. First of all the areas selected and the demographic group studied will be discussed followed by the data collection methods used.

Case study areas
This research attempts to examine how social interaction is happening within different residential built forms (dwelling types) in Edinburgh, Scotland. In an attempt to do this investigation, two areas were identified and studied. The selected areas can be classified as suburbs and typical of most suburban areas in the United Kingdom. Based on past reforms, migration of working classes and industrialisation, in the UK today suburbs are places where the average person/family can live and this covers the majority (middle, working class though considered to be an out of date classification (Savage and Devine, 2013, Stiff, 2011)) and therefore possibly suited for chosen the demographic group which will be discussed in later paragraphs. They are served and sufficiently interspersed with the services (transport facilities, schools, and services) to allow for a reasonable comfortable living. As the unit compared are dwelling type of densities 25 to 90 dph, these areas do contain all the residential types of interest in this study (Detached < 25; Semi-detached -25-30 dph; terrace – 50 -90 dph; tenement – 65-90 dph; 4 in a block- 65-120) ) and associated layouts/patterns (Crescent, grove, terrace/street) (Barton et al., 2010). It is advised that at this spatial scale level of the built form block type’s research into human behaviour is most effective.

Demographic group
People who spend more time in as well as use the residential environment more due to personal and social circumstance were the target group in people-environment research. Most people-environment studies have concentrated on the general public, older residents and teenagers and in some cases children (Kytta, 2011, Burton, 2010) (Abu-Ghazze, 1999, Williams, 2005, du Toit et al., 2007, Rogers et al., 2010, Appleyard and Lintell, 1972, Yancey, 1972).
A group that is missed from these studies are parents. It is not yet known that any study has examined residential space use in relation to social interaction, by this specific group – ‘parents and guardians.’ Parents with children up to primary school age were the proposed demographic group. The assumption is that this group use the built form to help them in their child care duties as observed in Appleyard & Lintell’s (1972), Abu-Ghazzeh’s, (1999)’s studies. The period of parenting is considered to be a challenging period in terms of mental health and wellbeing because of the total dependence of the child on the parent and the parents need to be totally responsible. Children also have special demands and needs of the outdoor environment which they use alongside the parents/guardians (Gehl, 1987). In choosing to study this group essentially two groups are chosen, the parents and the children. It is considered an important period to maintain good health for both the developing child and the parent. With regards to child care duties the demographic group were primarily women (Bould, 2003, Kawachi and Berkman, 2001). A review of literature by Coucher et al, (2007) states that, the negative impacts of the physical built environment on mental health and wellbeing is greater for women - housewives (among other vulnerable groups). Further to this, according to a health survey conducted in Scotland the average WEMWBS score is 49.5 (of which men recorded 50.3 and women recorded 49.6 scores). Though some argue that this difference is negligible, the scores still indicate that women recorded lower mental wellbeing scores than men. Older and younger populations also recorded higher scores than those aged 35-54 (Burns, 2010) and this is the age bracket in which the proposed demographic group fall. A sample of 30 was proposed with an average of 6 to 7 cases being studied for each dwelling type. The limitation to this is when looked at by area the cases studied reduce to 3 to 4 for each dwelling type. It has been noted however that studying social interaction has a ripple effect. A fair amount of the social interaction accounts of neighbours are reported by the cases, therefore giving an insight into how other people socially interact. Though this is still very case sensitive when taking issues like personality and socioeconomic status into consideration, this third hand information; however it is still useful to help create a picture of how interaction happens in the area.

Data collection
A number of data collection methods were employed to enable these objectives to be achieved and also to validate the authenticity and reliability of the findings. These methods were also considered to capture the demographic group’s unique patterns of movements and the residential environment space use to provide enriched useful data. As a qualitative study more than one method should be employed to strengthen the findings of the data provides (Baker and Edwards, 2012). A variety of qualitative data has been collected and is yet to be analysed extensively to build a clearer picture as well as further explain how and why the built form is used by people for social interactions (Bramley et al., 2010, Green and Browne, 2005). In the table below is a list of the qualitative methods adopted and the intent on what they would achieve. All these methods were used to gather data from the selected sample of the demographic group. So each participant provided information via all the methods listed below for the research.
### Table 1

<table>
<thead>
<tr>
<th>Data sources</th>
<th>Outcome</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interviews</td>
<td>Face to face in-depth interviews have been carried out with residents in the 2 areas in Edinburgh. The purpose of the interview was to gather information about social interaction within the immediate and wider neighbourhood and about their mental wellbeing. This is to allow an understanding to be made of how parents use their environments and how they lived.</td>
</tr>
<tr>
<td>Map use</td>
<td>Participants used wider area maps to illustrate where they go and how they use these spaces. Again though the interest is in understanding how social interaction happens within the spaces around the dwellings, it was important that the wider space use for interaction was captured to enable certain patterns to be identified. For example why certain spaces (either close to the home or away) are used more over others.</td>
</tr>
<tr>
<td>space use diagrams</td>
<td>Participants drew diagrams of their micro space use, i.e. their immediate home surroundings. These drawings are for visual information on how space is used for social interaction and where most interactions happen within the participants immediate home surroundings.</td>
</tr>
<tr>
<td>Site surveys and observation</td>
<td>Sites surveys and area observation were carried out to gather information about the urban form of the study areas. Social interaction which happens in certain spaces and places that are not in plain sight by the public) could not be observed for social interaction data. However some patterns of movement were satisfactorily recorded. Environmental data have been collected about the general state of the environment as there are correlations between the state of the environment and how it is used. This method of data collection has been inspired by Whyte’s (1980) theories and principles to analysing space use.</td>
</tr>
<tr>
<td>Sms data capture</td>
<td>This method is for reporting social interaction through space use experiences as well as identify areas used for interacting. Useful simple space use analysis can be achieved with this data.</td>
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</table>
**SMS data capture**

The latter method SMS (short messaging service) data capture was employed to capture social interaction information of the participants for a number of reasons. As mentioned data on how residents interact with each other within their neighbourhood have already been gathered through the other means listed above. However this information gave more of a narrative and past accounts of social interaction happenings within the spaces studied. The SMS survey was to deviate from the norm. It was of interest for this study to capture a more poignant, current and ‘in progress’ accounts of social interactions of residents. This was to back up and match up the other data gathered from the different sources as well as show an aspect of social interaction that might not have been picked up or identified in the other methods. It is believed that SMS data capture was an efficient way to gather this aspect of the data needed. Secondly this method shows promise of being an objective way of measuring social interaction. This is because the information gathered from the SMS was a report given of what was done which were a few hours old in most cases.

A number of cost effective systems were explored and in this current ubiquitous technological environment, the use of e-methods particularly ‘texting’ to measure social interaction seems feasible (Humphreys, 2005). As at 2013, 92 percent of adults in the UK owned a mobile phone and the number of texts a subscriber sent in a month were 153 (Ofcom, 2013). 95 percent of the participants within the sample responded to be part of the study via SMS messages. These basic statistics show that this method of collecting data is feasible and widely accepted as a means of sharing information electronically. E-data collection methods have some similarities to activity diaries methods of collecting data in that they are used to gather data on for example movement/travel within a restricted geographical location (Crobie, 2006). It is therefore appropriate to use it in this people-environment research study to capture information on how people interact with each other whilst using the spaces outside their private dwelling also called ‘third places’ (Rogers et al., 2010). As well as spaces beyond, which the ‘place use identification’ done with the map, tried to achieve.

**Space use analysis**

Participants were asked to draw their home environments (i.e. their house in relation to neighbours houses and street) and use wider area maps and indicate on it which areas are used for interacting – chatting/talking or meeting with people as well as places the children play. The information gathered from the SMS survey was furnished with place specific information which will be synchronised with this visual information provided. It is a modest approach of doing a spatial analysis of space use.

It was important to use this method to gather space uses data because it is an exercise that allows an understanding to be made of how people understand their environment and how this might affect their use of it. In other words, cognitive mapping and way finding of participants arising from an investigation into how residents use spaces based on the layout and arrangement. This analysis is important to examine how patterns and layouts are better (or otherwise) used for social interaction (Ortega-Andeane et al., 2005). Preliminary findings from his study particularly through observation demonstrates that people who have frequent social interactions knew their environments very well and had no difficulties or reservations in drawing it as well as in showing where they meet people.

It is too early to conclude, but perhaps an environment that can be easily understood and processed in the mind are environments that we function well and relate with each other well in as living beings. These environments are preferred over the type that will not afford us this. Butterworth (2000) states in a review of literature about how our mental health is affected by our environments that people always have the need to make sense of their environments. Preference for certain environments can then be explained based on the above. So it is possible that environments that ‘make sense’ instigate good relationships between people.
Therefore good relationship between people and their environments affect how they relate with people within this environment where people are seen as part of this cognitive environment. The following paragraphs will discuss ‘How’ the SMS data capture survey was conducted. Participants were required to use their smart phones to reply to the SMS questions listed below.

1. Have you spoken or met/seen anyone today in your neighbourhood?
2. How many people have you spoken or met/seen today?
3. Where did you meet them?
4. How long were you together?
5. Did you plan to meet with them?

Answers required to these questions were flexible. I.e. participants could elaborate if they wished or not. The SMS data collection aimed at collecting information about face to face interactions that happened within the neighbourhood i.e. how, where and when participants have met other people and interacted with them within spaces around the private residential dwelling and also beyond.

Participants were sent the SMS over some days in the period of two weeks in spring - May 2013 for 5 days. These days were selected at random and but included a weekend/non-school day and weekdays. The decisions to gather data on 5 days at close intervals was considered as during a pilot exercise. It was revealed that gathering this type of data over a prolonged period of days might cause participants (especially as they have already been intensively interviewed) to lose interest, hence it was kept to a minimum. Secondly there was the potential for this aspect of the data collection to be onerous regarding the fact that participants are parents and guardians and have very hectic lives caring for their children. Also they had provided information via other means. To overcome this questions-SMS were structured to be specific, direct, few and friendly (use of emoticons) to avoid it being burdensome but rather to encourage participants to do it.

It has been argued that e-technologies for communicating affect social relations (Humphreys, 2005, Rhoads, 2010). However there is a wider context to examine in terms of how these e-technologies affect social relationships and not just the negative effects. This research has benefited from the wider gains of using the e-systems. To overcome the problem of the effects of e-communication on face to face or physical presence interactions, i.e. in terms of preventing, interrupting or even obstructing interactions, participants were sent SMS in the evening hours (6pm to 8pm) and asked as in the questions their interactions in the day. Participants who failed to respond were re-sent the SMS 24 hours later asking of their interaction of the day. The challenge with this is that recollection of the information affected the intent to gather spontaneous data. This method is usually effective for capturing spontaneous space (residential built form blocks, layout and patterns) use information. The information gathered however is still useful to help understand daily interactions even though it might not necessarily be snapshots of ‘at the moment’ interactions.

One other main challenge was the problem with identifying the boundaries. This is a prominent problem which even empirical research has highlighted (Jenks and Dempsey, 2007). In the face to face interviews, maps were used to identify the boundaries of participants and rarely are any two boundaries the same. Participants we asked to draw a boundary of their neighbourhood in regard to places they use the most; are conversant with and can easily identify as places close to home. It was discovered that there were macro and micro boundaries for most. With this information, participants will be advised to provide information about social interaction within their immediate home surroundings which looks at the back garden, front garden, front entrance, stairwell, street, next door neighbours (micro
boundaries). Social interactions which happen further to the micro environment were also to be reported and the specific places mentioned. For example the school, shop, playground, streets, cafes names were to be mentioned as indicated on the map used during the interview. This was to help explain why certain places close to home were not used as opposed to places further from home and vice versa.

Participants were sent a ‘help/what to do’ document stating what was required of them and also explaining some technical terms such as ‘their neighbourhood’ and spaces in the micro and macro sense. As the information provided reveals poignant account of things and exposes aspect of their private life, i.e. what they are doing and with whom, ethical procedures to be acknowledged and put in place. On average each participant provided 3 out 5 days interaction information. Some participants were more active, responding to all the 5 days whilst others were not. However the response and participation rate was high overall. The text information received will be downloaded into a computer (Willis et al., 2010a, Graham, 2010) for analysis.

**Future work**

Evidence form literature presented in this paper tells us that social interaction as an act is good for our mental wellbeing and this social interaction can happen in a physical or nonphysical setting. The focus here is on the social interaction which happens in the physical environment. Again past studies shows us that the physical environment has the ability to manipulate our patterns of movement which then affects our social interaction. What we need to understand is how this manipulation is happening and therefore which environments are essentially useful for social interaction and particularly positive social interaction which is good for our mental wellbeing. This research study is in progress and there is still a lot of work to be done in the form of intelligent analysis to appreciate which residential dwelling types notwithstanding all the factors that can affect people interactions, especially, positive social interaction. The dwelling types have been used as the basis for investigation upon which other built form elements within the residential environments will be assessed as well.

The extensive literature review carried out has been useful in helping understand the relationship between social interaction and mental wellbeing as well an appreciation of how the built form has been produced and can generate social interaction. The face to face interviews that were conducted coupled with the visual information (area use information produced using maps and micro space use for social meetings and interactions produced from the drawings done by participants) are all data that will help in an understanding of how social interaction happens, where it happens and how it helps to improve mental wellbeing. Where issues of privacy and overcrowding within the residential built environment are concerned, some social interactions can be negative and health depleting. Hence the need to assess this and encourage environments that are health enhancing, though this will not be devoid of other issues that affect interactions between people living in these environments.

The SMS data capture which was discussed in this paper is believed to be an interesting inventive method that has been adopted to enable unique data on social interactions to be gathered. The data captured through this method has the potential to allow for a visual assessment to be made of the residential built environment in terms of how it generates interactions. Secondly, the information accrued from the analysis of the SMS data is useful as it will give planners an indication into how ‘day to day life’ social interaction happens and where interventions can be had to create residential environments which are health enhancing.
It is believed however that all the data collection methods employed in this study will enable a thorough enquiry to be carried out into which health enhancing environments planning practice should aim to plan for and establish.

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Appendix B - Conference Paper - Annual UK-Ireland Planning Research
Conference September 2013, Bristol

A Planning methods paper: SMS (short messaging service) data capture for reporting social interaction, Written by Judith E Montford

This is a short paper to discuss how SMS can be used to capture social interaction information among residents.

Background information of the study

In a literature analysis as part of this PhD research, it was discovered that the built environment, particularly the residential environment influences mental well-being in three major ways, through restoration, autonomy and social capital. Restoration focuses on how green environments and those that mimic nature can provide restorative benefits for people which in turn is good for their mental wellbeing. The second which is autonomy is about how one has control over the affairs of planning within their residential community. Some aspects of autonomy addresses equity issues as well as. The final which is social capital is about how the built environment design enhances sociability which is regarded as good for mental wellbeing. The way we, interact and relate with each other has a strong relationship with the space environment we live in. Which means our interaction with each other can be influenced by the physical arrangement of space although this is guided by social circumstances as well (Willis et al., 2010b). How the residential built form environment influences as well as produces positive social interaction among residents was the interest and focus. With the understanding that social interaction is good for mental wellbeing, this research has the overarching aim of investigating how residential environments can be health enhancing. An approach which is being pushed forward in the spatial planning practice agenda. This is part of the overall aim of examining the relationship between the residential built form and mental wellbeing. But the question is asked; why the interest in social capital within the residential environment as well as why the need for this research?

Planning research on healthy built environments has focused on green spaces and its restorative benefits (Burton, 2011). Another interest has been on social inclusivity and equity and its effect on general health and well-being (Macintrye et al., 2003; Stafford et al., 2008; Jenks et al., 2010). Research on how the designs of spaces influence health enhancing social behaviour such as social interactions and the building of relationships is rather limited. This limitation relates to studies which have adopted the Oscar Newman study style as with that of the Defensible Space study. Out of the limited

1 Newman (1972) study is a detailed investigation of spaces within specific dwelling types and their effect on behaviour.
pool, the outcome is; low to medium densities are good for social interactions. Information on motives and rationales are missing and these details are good to influence design practices that will encourage health enhancing social behaviours.

This study looks at how social interaction within the residential environment. The focus is on the dwelling and its surrounding spaces (the home-patch to be precise). Four different dwelling types were selected; the semi-detached dwelling, the terrace dwelling, the 4-in-a-block dwelling and the tenement dwelling. These four fall within the medium density range\(^2\) given to dwelling in Britain. Two areas (Currie and Restalrig) were selected for the simple reason that all these four dwelling types were located within them. Information on dynamics of social interactions within the different dwelling types in these two areas was gathered.

To capture social interaction information regarding; how it is happening, where it is happening and how it is happening, it was imperative to adopt methods that will ensure this. Traditional qualitative methods such as interviews and the use of socio-spatial schemata’s (visual information about where people prefer to communicate) were adopted. These methods provided narratives of why (motive) people interact where (space) they do. The manner of the interaction was not effectively captured from these two named methods. See an illustration in Figure 1 below. Another method which provides information and answers on the manner of interaction was important. Perhaps it might be argued that knowing why and where people interact is sufficient to influence design interventions. However the literature explains that the manner of interaction is key to understanding the importance of the interaction. Various interaction types on mental wellbeing are not uniform. Some are more effective than others and design has the ability to influence this variety and dynamics in social interactions.

![Figure 1 Matching methods to outcome](image)

Methods are not entirely independent of each other. The main outcome for each has been covered by other methods as well hence the venn diagrams.

\(^2\) 30-90 dwelling per hectare
Research strategy – activity diaries

As can be seen from the above, information on real life social interactions which will elucidate the manner of the interactions was needed. This meant data of current accounts of social which reflected at times instantaneous social interaction within the physical residential environment. This would capture how social interaction is happening. Also information about where social interaction happens could be extracted. The use of another method was not just an afterthought but was considered during the interview processes.

An activity diary of social interaction events was proposed because of its potential to offer rich data of actually happenings of interactions (generating data) rather than accounts given of past interactions (Gibson and Brown, 2009). It was also to help record frequencies. The term frequency is used carefully in this instance and must only be related to repeated occurrence of social interactions in certain spaces. Therefore as an aid to identifying hotspots for social interactions and not only to inform spaces that attention should be paid to with regards to policy implications, but also to understand certain patterns and occurrences of interactions and why. The use of the diary method is advantageous because it can be used to generate data over periods of time, allowing the researcher to understand a phenomenon than he/she would have in a one off interview. Also this method allows for empowerment of participants in any research. It allows for a partaking which they are in control off (Gibson and Brown, 2009). Participants are able to develop ‘their own voice more easily than they can in interview settings’.

Activity diaries are often used to capture information on time use, communication and also movement/travel - space use (Crosbie, 2006). Hence making it is appropriate to use it in this study to capture information on how people use the spaces outside their private dwelling also called ‘third places’ (Rogers et al., 2010).

Advice has been given not to regard the diary method of collecting data as supplementary to any method (Crosbie, 2006), as they are said to provide content that is not likely to address the direct interests of a research (Gibson and Brown, 2009). In this research however, it was not the case because as stated previously, accounts of social interactions had been collected through in-depth interviews and visual data. Another method to capture ‘real happenings’ was required; therefore the activity diary adopted in this study was to an extent supplementary. There was an element of backing up and matching up to the previous data gathered as well as picking up missed out unidentified concepts in the other methods. This back-up/match-up is also to aid in validity and credibility of findings. Despite this ‘back up’ role, the activity diary adopted had its unique purposes as an actual data collection method to the research overall.
A number of methods were explored in terms of their feasibility in this PhD research. See Table 1 below.

<table>
<thead>
<tr>
<th>Methods</th>
<th>Detail</th>
<th>Reasons for not patronising it</th>
</tr>
</thead>
<tbody>
<tr>
<td>Observation of behaviour - SI</td>
<td>Use of systematic social observation methods to observing residents and how they interact within their residential environment This method of data collection had been inspired by Whyte’s (1980) theories and principles to analysing space use.</td>
<td>The observation method of collecting data, requires that a technique of rules is employed to observe and record behaviour (Creswell, 2009). - Ethical considerations could not be met as the sample group involved children. - Behaviour alterations could occur due to the knowledge of being watched. Authentic interactions might not be captured.</td>
</tr>
<tr>
<td>Activity diary</td>
<td>Using paper diaries to record spatial interaction information over a period of days – 2 weeks. Participants were then to post diaries back after full completion of it.</td>
<td>The method is not reliable as diaries might not be returned, or social interaction information might not be provided if participants are not reminded.</td>
</tr>
<tr>
<td>Twitter and Facebook</td>
<td>This approach is similar to the activity diary method and will require participants to record and send daily social interaction events on asocial media site. Unlike the activity diary paper method, entries would not be accumulated before being sent to the researcher.</td>
<td>A majority of the participants did not have twitter or facebook accounts. For those who did, they did state that they hardly had the time to visit and use these sites.</td>
</tr>
</tbody>
</table>

Table 1 a comparative analysis of different number of methods to explore feasibility for use in this research

Using the mobile phone in research

The idea to use SMS (short messaging service) came about after a number of cost effective systems were explored and in this current ubiquitous technological environment, the use of e-methods particularly ‘texting’ to measure social interaction seems feasible (Humphreys, 2005), as well as effective when considering scalability. It is also effective when considering scalability. As at 2013, 92 percent of adults in the UK owned a mobile phone and the number of texts a subscriber sent in a month were 153 (Ofcom, 2013). These basic statistics show that this method of collecting data is feasible and widely accepted as a means of sharing information electronically.

The use of mobile phones and in recent time’s smart phones (but will still be referred to as a mobile phone), to gather information is not entirely new. It can used to collect information (data) in many forms, ranging from texts/SMS through to mms, pictures and videos. The type of information collected is largely dependent on what is required
and the tool available to collect the information. For example, where a basic mobile phone can be used to collect SMS/texts messages, a smart phone with an application or a GPS tracking system, could be used to collect a bit more i.e., pictures of places, people etc, videos, movement tracks, blogs, mms and more as the technology advances.

Mobile phones have been used in health monitoring research studies, travel patterns studies, social organisation and behavioural monitoring studies (Freifeld et al., 2010, Bamford et al., 2008) (Wiehe et al., 2008, Humphreys, 2005) (http://www.frontlinesms.com/). One of the popular ‘ongoing’ studies which use this method (smart phone application) to gather information on peoples ‘Happiness’ is that which is conducted by LSE (http://www.mappiness.org.uk/). Subjects as health, travel, and space use, is perhaps best studied with the use of such innovations to gather information as compared to the use of tradition methods (interviews, surveys). There is also the inherent ability to capture time/period sensitive information about people’s movement and behaviours within space. As well, the information gathered this way is spatially rich.

Advantages of using SMS

Using SMS to capture data through a survey was to deviate from the norm and was seen as an efficient way to gather this aspect of the data needed – the manner of interactions.
Secondly this method showed promise of being an objective way of measuring social interaction. This is because the information gathered from the SMS was a report given of what was done which were a few hours old in most cases.
Thirdly it was to help in researcher dissociation from the research as the texts only recorded facts (add from section on positionality).
The fourth advantage is the engaging nature of this approach to gathering data. Research participants are said to be ‘active participants’ rather than passive recipients of information regarding their lives (Freifeld et al., 2010). It is conceivably inflexible to say that the use of mobile devices to provide information affords some level of empowerment over for example the use of a questionnaire to provide data or to verbally answer questions asked by an interviewer. However perhaps is it the fact that the information sent to participants as well as the answers provided is within their possession; or the use of a personal device to provide information about oneself; or again the ‘novelty’ of using the phone to provide information? These are assumptions made.
The fifth advantage is the ability to explore lived experiences of the participants. For this reason data on how people interact with each other and also where they prefer to do so was captured. In the context of ‘where’ the SMS method helped to gather and
capture data on social interaction which happens in areas that were not easily observable for example some private spaces.

The sixth advantage is the SMS allowed for an opportune situation where extra data could be collected. The use of the e-methods to gather data in this way could be likened to space use analysis method which covers cognitive mapping and way finding of participants. This is an investigation into how residents use spaces based on the layout and arrangement. This analysis was important to examine how patterns and layouts are better (or otherwise) used for social interaction (Ortega-Andeane et al., 2005).

Methodology

This method though having a supplementary method character was considered as a main data collection system. Therefore it was designed not to be onerous to the participant in particular (Crosbie, 2006). As stated above this method was not an afterthought, but very much regarded as part of the whole data collection process.

After the face to face interviews, participants were asked if they would be interested in taking part in a research which requires that they text about their social interaction experiences. There was a 100% positive response rate. All participants were happy to take part in this second phase of data collection and all confirmed that they had mobile phones and were happy to give out their numbers for the survey. Most expressed that it was easier (preference) for them to reply to a text than to log onto a system to reply to a message (as via twitter or Facebook). This is partly due to the busy lives they have whilst caring for children. To emphasize this, 26 out of the 30 participants who took part in the interviews, contacted me to express interest in taking part in the study, at the first instance through text messaging.

Approach

The E-data collection system involved the use of mobile phones – smart phones to collect data on social interaction. It required participant’s to use their mobile telephones to ‘text’ in reply to texts received from the researcher. The texts questions were structured to enable the collection of analytically focused information about face to face interactions that happened within the neighbourhood i.e. on the following - how, where and when they have met other people and interacted with people – neighbours and non-neighbours within certain spaces – immediate neighbourhood (that is the space around the home surroundings as they drew during the in-depth interviews) and wider neighbourhood (that is areas beyond the home or as they identified/drew as their neighbourhood during the in-depth interviews) (Gibson and
Brown, 2009). Residents were asked and expected to provide social interaction information over some days in the period of two weeks over the spring 6th to the 17th of May 2013. The days were selected at random within the two weeks but covered - school days and weekends. The collation of visual and graphical information was also encouraged; however none provided this, but answers to the SMS.

Texts messages were sent sequentially to participants. The order of sending based on answers received to previous texts sent. Whereas some participants answered texts chronologically, others did not. Some responses to the first or second text messages answered all unsent texts messages, therefore cancelling the need to send subsequent messages as in the order of sequence.

Self-help and explanatory documents and letters was sent to all participants prior to the survey to explain the dynamics of the process as well as some technical terms such as ‘their neighbourhood’ and spaces in the micro and macro sense. This could have affected some of the responses due to the letter and document sent to explain the exercise, hence judging what was expected from them and hence texting these to me in total. Where texts were not clear on technical content for example, of place/spaces used for interaction, texts were sent to them to clarify. Problems were not encountered in terms of the use of ‘text language’. All texts were of plain English standard and easy to read and understand. Participants were encouraged to elaborate if they wished or not. This flexibility was encouraged in order to get a lot from them in terms of space uses for interaction.

The questions asked are as below;

**Text questions**

1. Have you met (chat, waved etc) anyone in your immediate or wider neighbourhood today?
2. How many people have you met*?
3. Where did you meet them?
4. How long were you together?
5. Did you plan to meet with them?

* met referring to seen, talked to, chatted with, waved at and other subtle forms of interaction. This was explained in the letter to participants.
Challenges with this data collection method

There was then potential for this aspect of the data collection to be onerous regarding the fact that participants are parents and guardians and have very hectic lives caring for their children. To evoke involvement and interests, questions-texts were construed to be specific and direct and few to avoid it being burdensome. Lessons were learnt from SMS/MMS marketing approaches and hence the strategy for using text to collect data was designed in the most user friendly way to encourage participants to take part. However it could have been onerous to some as two participants in the Restalrig Area did not participate.

It has been argued that ICT has not been to able to replicate face to face communication and that; e-technologies for communicating affect social relations (Humphreys, 2005, Rhoads, 2010). Perhaps it was questionable to use the very medium which breaks it down to measure it. However from Gibson and Scollon’s (undated) arguments, interaction operates in a variety of milieu and so worth the use and exploration of other media to further understand it. There is therefore a wider context to examine in terms of how these e-technologies affect social relationships and not just the negative effects. This research has benefited from the wider gains of using the e-systems. To overcome the problem of the effects of e-communication on face to face or physical presence interactions, i.e. in terms of preventing, interrupting or even obstructing interactions, participants were sent SMS (the texts questions about their interactions in the day) in the evening hours (6pm to 8pm). Participants who failed to respond were re-sent the SMS 24 hours later asking of their interaction of the day.

On average each participant provided 3 out 5 days interaction information. Some participants were more active, responding to all the 5 days whilst others were not. However the response and participation rate was high overall as the success of this method depended on participants providing responses to the SMS they were sent.

The text information received was downloaded into a computer for easy access and analysis (Willis et al., 2010a, Graham, 2010). A software - Wondershare MobileGo for Android was downloaded via this site http://www.wondershare.com/android-manager/ and was used transfer all text messages from the phone device to the pc device.

Conclusions and the way forward

As mentioned above the use of this method has been successful in this research. Of course to pioneer this in further research some piloting and feasibility studies will need to be carried out to make the method robust for extended studies. 26 out of the 30 participants participated in the SMS survey and the majority provided 5 days of
interactions. The text information received was downloaded onto a computer for easy access and analysis. The transfer resulted in 26 A4 pages of text information about participant’s interactions (an average of 1 A4 page of texts per participant). This research is ongoing and the information gathered is being analysed.

The paper shows a success story of how the mobile phone was used to gather information for planning research. This is an area that could be developed further as this research seems to be the first which explores and uses the e-systems as an activity diary method.

REFERENCES


Macintrye, S., Ellaway, A., Hisock, R., Kearns, A., Der, G. and McKay, L. (2003) `What features of the home and the area might help to explain observed relationships
between housing tenure and health? Evidence from West of Scotland’, *Health and Place*, 9, 207-218.


Appendix C - Social Interaction measurements from some selected studies (those who listed the questions they used)

**CityForm Social Interaction questionnaire (Jenks et al.) UK**

*Not counting people you live with...how often do you see relatives?*
Every day/most days  At least once a week  At least once a month  Never

*Of these friends/relatives, how many of them live in your neighbourhood?*
None  One or two  There or four  Five or more

*How many of your neighbours would you say that;*
You see socially on average once a week
You have a chat with/greet
You know by name
You have no contact with
You avoid contact with

*How strongly do you agree or disagree with each of the following statements?*
If I needed a favour, I could rely on someone in this neighbourhood to help me
This is a place where neighbours look out for each other
I feel that I am unable to influence decisions in the neighbourhood
I am proud of neighbourhood

*Compared with other neighbourhoods, this one has many advantages*
This is friendly neighbourhood
I feel that I belong to this neighbourhood
My local neighbourhood reflects the types of person I am
People from different backgrounds get on well together in this neighbourhood

**Items in social interaction with neighbours scale – by Du Toit et al (2007)**

*How many days in the past month have you:*
Waved to neighbour
Said hello to a neighbour
Stopped and talked with a neighbourhood
Gone to a neighbour’s house to socialise
Had a neighbour your house to socialise
Gone somewhere (restaurant, shopping, football) with a neighbour
Asked a neighbour for help
Sought advice from a neighbour
Borrowed things and exchanged favours with a neighbour

**Social interaction measurements on mean ratings 1 to 5 Appleyard and Lintel (1972) USA**

Do you think this is a friendly street? (perception)
Do you think there is a feeling of community on this street?

**Places not a scale must have been listed**
**Where so people congregate on the street if at all?** (a specific place named)
**Where do children play if at all?**
**Where do teenagers gather if at all?** (Places not a scale must have been listed)
**Where do adults causally meet and chat outside if at all?** (the places limited to outside)
Do you have any friends and relatives who live on this street?
Which people on this street do you know by sight?
Neighbourhood interaction scale, rated on a scale of 0-6 by Caplow and Forman... USA

<table>
<thead>
<tr>
<th>Rating</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>Do not know their names or faces</td>
</tr>
<tr>
<td>1</td>
<td>Recognise them on the street, but have only a greeting acquaintance</td>
</tr>
<tr>
<td>2</td>
<td>Stop and talk with them outside regularly (only one adult from each family involved)</td>
</tr>
<tr>
<td>3</td>
<td>Stop and talk with them outside regularly (All adults involved)</td>
</tr>
<tr>
<td>4</td>
<td>Mutual aid and/or common activities (involving one adults from each family)</td>
</tr>
<tr>
<td>5</td>
<td>Mutual aid and/or common activities (involving all adults)</td>
</tr>
<tr>
<td>6</td>
<td>Mutual visiting and entertaining in each other’s houses, including drinking or dining</td>
</tr>
</tbody>
</table>
Appendix D - Recruitment Flyer

Where you live and how you relate to people

Would you be happy to participate in a research study to talk about where you live and how it affects your interaction with other people?

Are you a parent/guardian with young children (aged 0-11)? Do you live in Currie?

There is a £15 shopping voucher for you as a ‘thank you’ for taking part in the study.

If you are happy to take part in the study please contact me Judith Montford at the School of Built Environment – Heriot-Watt University on either

e. jem25@hw.ac.uk or
t. 0131 451 4601 m. 0790 3574507

I hope to hear from you. Thank you

Where you live and how you relate to people

Would you be happy to participate in a research study to talk about where you live and how it affects your interaction with other people?

Are you a parent/guardian with young children (aged 0-11)? Do you live in Restalrig?

There is a £15 shopping voucher for you as a ‘thank you’ for taking part in the study.

If you are happy to take part in the study please contact me Judith Montford at the School of Built Environment – Heriot-Watt University on either

e. jem25@hw.ac.uk or
t. 0131 451 4601 m. 0790 3574507

I hope to hear from you. Thank you
Appendix E - Study information sheet

Dear Participant

I am a research student at Heriot-Watt University and I am interested in looking at how the residential neighbourhood (patterns, design and layout) affect how people interact and relate with other people.

My aim is to understand how interaction between people happens through their use of the spaces and places around the different residential built form types (detached, semi-detached, terraced, tenement, 4-in-a-block) in Edinburgh.

The area in which you live has been identified and carefully selected as a case study site. This is because it has all the requirements (different dwelling types) needed for comparing social life and relationships that happen within various types of residential built forms.

You have also been selected as a participant because you fit the criteria for demographic group of interest – parents with children aged 0-11 years.

Hence I will like to ask you questions regarding how and in some instances your family, use your wider and particularly your immediate residential environment to interact with people. This will be in the form of an interview which will be about 45 minutes. If you are unhappy with any question you do not have to provide an answer or answers to the questions asked.

Your response to any question is highly valued and important to this study. Please note however that your responses/answers will be treated and kept strictly confidential. A consent form is attached.

Please contact me on the details provided below should you have any further questions or information to give following the interview, alternatively you can contact my research study supervisor – Dr Caroline Brown (Lecturer) on telephone 0131 451 8224 or email c.j.brown@hw.ac.uk to check the authenticity of the study

Thank you very much for your time

Judith E Montford
Appendix F - Interview consent form

Interview consent form

Consent

By consenting to take part in this study, I understand and accept the following;

- I voluntarily accept to take part in this study and can withdraw at any time
- I do not have to answer any question I am unhappy with
- I can request that the interview is terminated at any times
- I can request that the whole interview or part of it are not recorded
- My details, name, identity, address and location will be kept confidential and not recorded in any part of this study including in transcripts, publications, presentations and discussions.

Please tick the following:

I agree to participate in this study

I agree that the information I give can be used for the reasons and purposes specified

I agree and give my permission for this interview to be recorded

Details

Name of participant ……………………………………………………………………………………………………………………………..

Signature ………………………………………………………………………………………………………………………………………

Date ………………………………………………………………………………………………………………………………………

Signature of Student/Researcher ………………………………………………………………………………………………………

Student/Researcher contact details:

Judith E Montford

Jem25@hw.ac.uk 0131 451 4601

Heriot-Watt University, School of Built Environment, WA Rm 1.29, Edinburgh, EH14 4AS
# Appendix G - Interview questions/schedule

## Interview questions

### 1 Layout and patterns the – Physical environment

<table>
<thead>
<tr>
<th></th>
<th>Questions</th>
<th>Prompts</th>
</tr>
</thead>
<tbody>
<tr>
<td>Neighbourhood</td>
<td><strong>How would you describe your neighbourhood?</strong></td>
<td><strong>Draw what you think is a boundary of your neighbourhood?</strong></td>
</tr>
<tr>
<td>Use of wider area Map for this exercise</td>
<td><strong>Tell me where you go for various activities or identify places you frequently use?</strong></td>
<td><strong>-Grocery shopping/ meet with friends/catch-up-coffee/Children to play</strong></td>
</tr>
<tr>
<td></td>
<td><strong>Where are you most likely to meet people or bump into people?</strong></td>
<td><strong>-For walks/leisure</strong></td>
</tr>
<tr>
<td>Home &amp; immediate surroundings</td>
<td><strong>Can you tell me a bit about your home &amp; its surroundings?</strong></td>
<td><strong>Bus stops/ Open spaces /Car Parks/Grocery store/cafe....</strong></td>
</tr>
<tr>
<td></td>
<td><strong>Where is it on this map?</strong></td>
<td><strong>Private entrances and public entrances</strong></td>
</tr>
</tbody>
</table>

### 2 Self selection issues

<table>
<thead>
<tr>
<th></th>
<th>Questions</th>
<th>Prompts</th>
</tr>
</thead>
</table>
Establishing reasons why residents live at where they live

<table>
<thead>
<tr>
<th>Questions</th>
<th>Prompts</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>How long have you lived here?</strong></td>
<td>If for 5-10 years ask</td>
</tr>
<tr>
<td>&gt;5-10 yrs</td>
<td></td>
</tr>
<tr>
<td><strong>What has kept you here?</strong></td>
<td>If &lt; 5 years ask</td>
</tr>
<tr>
<td>&lt; 5 yrs</td>
<td></td>
</tr>
<tr>
<td><strong>Where did you move from and why?</strong></td>
<td>Change in household / cheaper acc/ nicer area/rented acc/ bought/own it</td>
</tr>
</tbody>
</table>

3  Use the residential environment space - Home & immediate surroundings

<table>
<thead>
<tr>
<th>Questions</th>
<th>Prompts</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Thinking about your immediate home surroundings where are you most likely to meet and talk with neighbours?</strong></td>
<td>I S - Stairwell/ Landing/Corridors/ Common areas/ bin areas/ Through or at window E S – Gardens/ Porches/ Pavement/ Backyard, Over fence, cycle parking, pathways, bin areas,</td>
</tr>
<tr>
<td><strong>Tell me a bit more about these places where you meet and talk with people</strong></td>
<td>About - shading/sunny/seating/ aesthetics &amp; ornamentals/ Grassing/carpeting /covering/ convenience of use.</td>
</tr>
<tr>
<td>[I would like to know how the children use spaces around your home.]</td>
<td>Suggestions for improvements.... Features you like or dislike</td>
</tr>
<tr>
<td><strong>Tell me where the children play?</strong></td>
<td>How many children do you have/care for</td>
</tr>
<tr>
<td>Children’s use of space</td>
<td>Surveillance Safety</td>
</tr>
<tr>
<td>------------------------</td>
<td>---------------------</td>
</tr>
<tr>
<td><strong>Do they play on their own – [supervision]?</strong></td>
<td><strong>What ages are they</strong></td>
</tr>
<tr>
<td><em>Ok now I would want you to think about safety with regards to the use of these areas.</em></td>
<td><em>Is supervision with other parents or do you supervise other people’ children?</em></td>
</tr>
<tr>
<td><strong>Are you concerned about safety in this neighbourhood?</strong></td>
<td><strong>Ask why for +ve or –ve answers?</strong></td>
</tr>
<tr>
<td></td>
<td><strong>Places they would not go to or use</strong></td>
</tr>
<tr>
<td></td>
<td><strong>Times and seasons affecting use</strong></td>
</tr>
</tbody>
</table>

4 Thick and thin trust principles - how social interaction happens

<table>
<thead>
<tr>
<th>Questions</th>
<th>Prompts</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>For describing the people living in this area/neighbourhood</strong></td>
<td><strong>Establishing trust?</strong></td>
</tr>
<tr>
<td><strong>How well do you know your neighbours?</strong></td>
<td><strong>Unplanned activities</strong> - Waving/Chatting -along path, over fences/Stop chats</td>
</tr>
<tr>
<td></td>
<td><strong>Planned activities</strong> – Visiting/Asking for help, Child care/School runs/Social activities</td>
</tr>
<tr>
<td><strong>Who do you know very well and why?</strong></td>
<td><strong>Do you do things together.... where they do things together.....</strong></td>
</tr>
<tr>
<td></td>
<td><strong>Next door/next block/ on the road etc...</strong></td>
</tr>
</tbody>
</table>
[I want you to think about your neighbourhood and how you feel about it as well activities you undertake with other people in your neighbourhood.]

Are you involved in any community activity/ies?

What are the activities and how long they have been involved in it

E.g. – Planning matters, Neighbourhood watchdog/surveillance

We have completed the interview. Thank you very much for your time and for the information given.

Would you like to add anything else to the information you have just given me? Or is there anything that came to your mind about your space use experiences during the interview that you wish to add?

Participating in an Activity diary

Would you like to take part in an activity diary which involves blogging/texting about your social interaction experience? Yes/No
Appendix H – Socio-economic information about the participant

About you

Which age group you belong to?
17-25 [ ]  26 – 35 [ ]  36-45 [ ]  46 – 60 [ ]  61+ [ ]

Are you currently working?
Yes [ ]  No [ ]

Do you work full or part time?
Work full [ ]  Part time [ ]

Is your house/home
Rented [ ]  or Owned/bought [ ]

If rented, is it from
Private landlord [ ]  Social landlord [ ]

What is your household income per year (Gross or before tax)?
< £9000 – £15,000 [ ]
£16,000 – £23,000 [ ]
£24,000 – £35,000 [ ]
£36,000 – £45,000 [ ]
£46,000 - £60,000 [ ]
£61,000+ [ ]
Not sure [ ]

Or what is your income per week?
Please give round figure [ ]
Appendix I – Measuring participants mental well-being using SWEMWBS

Your wellbeing

<table>
<thead>
<tr>
<th>Over the last week</th>
<th>None of the time</th>
<th>Rarely</th>
<th>Some of the time</th>
<th>Often</th>
<th>All of the time</th>
</tr>
</thead>
<tbody>
<tr>
<td>I’ve been feeling optimistic about the future</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>I’ve been feeling useful</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>I’ve been feeling relaxed</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>I’ve been dealing with problems well</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>I’ve been thinking clearly</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>I’ve been feeling close to other people</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>I’ve been able to make up my own mind about things</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>
Appendix J - SMS survey information sheet for all participants

30th April 2013

Dear XXXXX

Thank you very much for your time and for taking part in my study. I am sending you this letter because you were happy to participate in a SMS exchange with me about your social interaction. As mentioned to you at the time, I would like to capture information about your interaction with others within your neighbourhood (particularly your immediate home surroundings). During the period between 6th May and the 17th of May 2013, I will send you SMS on 5 different days within this period. The SMS will ask you questions which will cover the following –

- How many people you met and had a chat with, the number of people you met.
- Where you met them in the immediate home surroundings for e.g. the back garden, front garden, front entrance, stairwell, and front pavement. You can talk about interactions and social meetings further to home, [(i.e. the school, shop (name), playground, streets (name), and other people’s homes (numbers) etc)] if you have not had any interactions in your immediate home surroundings.
- How long you met these people for and whether the meeting was planned.

You may not need to answer all questions if you happen not to have any interaction that day. Also should I not receive any SMS reply from you, I will remind you in 24 hours please.

It should be fun and should not take too much of your time. You can include pictures and diagrams of places you interacted or met people if you are happy to. In order to collate all social interaction experiences of the day, I will send you the SMS in the evening of the selected (5) days. The SMS will be sent from this mobile number – 07453 647 094.

I will be very appreciative if you respond to the SMS as they are sent to you. I would also like to emphasise that I am grateful for your time and for taking part in my study. Should you have any questions regarding this exercise please do not hesitate to contact me. I look forward to receiving your SMS about your social interactions in due course.

Yours sincerely

Judith Montford
Appendix K – SMS survey help information sheet for participants

‘Your immediate neighbourhood’
To help avoid confusion about what ‘your immediate neighbourhood’ is, it would be your immediate home surroundings. For example the following places;
- the back garden
- front garden
- front entrance
- stairwell
- veranda
- front pavement
- drive way
- front door
- over the garden fence or divider fences
- your street/road
........
If you recall these are the places located on the drawings you made. There will be other places that the list does not cover... please do include these places if you interact with people there.

‘Your wider neighbourhood’
Places beyond home i.e. your wider neighbourhood will be places like;
- the school
- shops (please give names)
- playground
- park
- other streets (please give names)
- other people’s homes (please give numbers if possible)
- beach
- water course
- cafe
- library
......................

Again, there will be other places that the list does not cover... please do include these places if you interact with people there.
Appendix L - The SMS questions

1. Have you spoken or met/seen anyone today in your neighbourhood?

2. How many people have you spoken or met/seen today?

3. Where did you meet them?

4. How long were you together?

5. Did you plan to meet with them?
Appendix M - Map of study areas with the sub areas
Restalrig
Currie
Appendix N – Environmental data collection schedule (Survey checklist)
Adapted from Elizabeth Burton’s site survey checklist

Is this area a residential area? Yes ☐ No ☐

Dwellings
What dwelling types can be found here?
- Detached ☐
- Semi-detached ☐
- Terrace ☐
- 4-in-a-block ☐
- Tenements ☐
- Flats/High rise ☐

Which dwelling type is dominant?

OR

Is there an even distribution of the dwelling types? Yes ☐ No ☐

Layout
What layout/patterns can be found here?
- Linear ☐
- Cul-de-sacs/enclosed ☐
- Radial ☐

Which layout/pattern type is dominant?

Street Use
Are the streets more of?
- A heavy Trafficked (40 mph +) ☐
- A moderately trafficked (30 mph) ☐
- A Light trafficked (20 mph) ☐
How do people move/travel within this area?

- Are more people on foot/cycling? Yes [ ] No [ ]
- Are more people using cars? Yes [ ] No [ ]

(Also used to test how busy the area is, i.e. in terms of people walking about during the day – working hours)

Open space

Are there parks/open spaces in this area? Yes [ ] No [ ]

How many?

Land uses

Schools Yes [ ] No [ ]

How much school?

Shops Yes [ ] No [ ]

How many local shops?

Leisure facilities Yes [ ] No [ ]

Medical facilities Yes [ ] No [ ]

The general state of the environment

<table>
<thead>
<tr>
<th>Condition of the built form</th>
<th>Good</th>
<th>Moderate</th>
<th>Bad</th>
</tr>
</thead>
<tbody>
<tr>
<td>Litter management (including dog poo, over run garbage bins etc)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>The presence of graffiti</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Condition of front gardens</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Appendix O - Extra material

Presented papers on methods at the following conferences/seminars

- 8th Heriot-Watt Postgraduate Researcher Conference June 2013
- IHURER seminar presentation July 2013

Participant quotations on specific issues

Methods

*It is nice to see it all visually actually, because you never see it like that... I think it is a really good idea. And also it gives you something to focus on doesn’t it... and you kind of think... Oh yeah... there, there and there* [RE11 4-in-a-block]

*It is helpful you have a map actually.... which is errm this is the main road here which comes up right from the university. So my house is round about here... probably this one* - [referring to drawing on the map] [CU2 semi-detached]

*It is good actually seeing it* - [referring to drawing on the map] *like that... [RE15 semi-detached]*

Social interactions within the Tenement

*You know you are in the building and you are living in the building with lots of other people but you generally don’t see them or you might say hello when you pass then on the stairs... [RE8 4-in-a-block]*

Tenure issues

*Most majority of all these houses here are all bought, so they all think that they are better than what we are at this end basically....but they all send their kids up to ours, but as soon as our kids go down there, that is completely different* [RE5 Tenement]