Chapter 16
Urban Wellbeing in the Contemporary City

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Abstract The concept of *well-being* in the contemporary city refers to people's ability to live healthy, creative and fulfilling lives. In this chapter, the intent is to understand theoretical perspectives about well-being research, essentially objective and subjective health and well-being of individuals in modern urban society. The emphasis is given to "non-medical" factors to determine the term by complex interactions between social, cultural, physical environments and individual behaviours. The chapter further indicates the tools and techniques adopted by researchers for measuring well-being emphasising the capability approach by Amartya Sen and Luc Boltanski's approach on critical capacity. As a conclusion, based on the views and measures, the chapter suggests that addition of citizen science methodologies have potential utility for bridging objective and subjective perspectives of health and well-being, and influencing urban planning and design.

Keywords Wellbeing · Health · Urban environments · Measurement tools · Citizen science

16.1 Introduction

The term *well-being* has a complex and multi-faceted nature. While *well-being* is a widely used term in academic, public sector and commercial arenas, it can be defined and measured in a variety of ways (Dodge et al. 2012; Alatartseva and Barysheva 2015). Definition and measurement are further confounded by terms that

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are used interchangeably with *well-being* such as "quality of life", "happiness", or "life satisfaction" (Dodge et al. 2012; Ballas 2013). Typically, in studies investigating well-being in the urban context, *well-being* is equated with "mental health" (Evans 2003; Bond et al. 2012) or considered synonymous with "health" (Koohsari et al. 2013). Some studies exploring well-being in built environments define *well-being* as a combination of health and comfort, or health, comfort and happiness (Bluyssen 2010).

At its broadest level, the concept of *well-being* refers to people's capacity to live healthy, creative and fulfilling lives. In the late 1990s, psychologists Kahneman, Diener and Schwartz (Kahneman et al. 1999) proposed a new science of well-being focused on explaining positive states of mind and subjective assessments of emotions and quality of life. Social scientists have since shown great enthusiasm in understanding the nature and determinants of well-being.

Two conceptual approaches dominate well-being research: the objective approach examines the objective components of a good life; the subjective approach explores people's subjective evaluations of their lives. The objective approach defines well-being in terms of quality of life indicators such as material resources, income and housing, and social attributes, such as education, health, and social networks. This approach to well-being is exemplified in Amartya Sen's work about how to measure poverty and economic inequality (Sen 1973, 1992), and its extension to the capabilities that individuals should have to live fulfilling lives (Sen 1999). This approach is also the basis of Michael Marmot's seminal work *Social Determinants of Health* (Marmot et al. 2008) that has demonstrated the complex social, cultural, political and economic factors that contribute to the pronounced health inequalities in modern urban society.

The objective approach to well-being informs national and international statistical indicators such as the OECD's Better Life initiative, and the United Nations Development Programme Human Development Index. Social indicators frameworks attempt to measure societal development and quality of life using aggregate measures of income, education, employment, housing, security, health, social inclusion, and environmental quality. It is recognised that objective well-being is not equally distributed. For example, recent longitudinal analyses of inequalities in objective well-being in Australia show that gender, age, class and ethnicity are sources of categorical inequality (Western and Tomaszewski 2016).

Considerable academic work exists in the behavioural and social sciences which seeks to define *well-being* from a subjective perspective. Two key definitions can be identified in this well-being research: hedonic well-being (Diener et al. 2018) and eudaimonic well-being (Deci and Ryan 2008; Ryff and Singer 2008). Hedonic or subjective well-being (SWB) relates to happiness and perceived quality of life; well-being is conceptualised and measured using people's subjective overall life evaluations. The concept of SWB falls within the hedonic perspective that defines wellness or happiness as being fundamentally about maximising pleasure and avoiding or minimising pain. The independent facets of SWB most often researched are life satisfaction, positive affect and negative affect. Conceptualisation of SWB is discussed further in scholarly work on measurement of well-being (Kahneman and Krueger 2006).

Definitions of *well-being* have expanded to move beyond life satisfaction and affect to a meaningful interaction between individuals and their physical and social environment, such that well-being includes cognitive, physical, and mental health, as well as psychosocial well-being and the meeting of basic needs. Eudaimonic well-being relates to a fuller psychological concept of one's life having purpose and individuals having the capabilities to function effectively to this end, known as self-determination (Ryan and Deci 2011) or flourishing (Shah and Marks 2004). From the eudaimonic perspective, one lives in accordance with one's "true self" focusing on meaning in life and self-realisation. Individuals are considered to be "well" if they have opportunities to realise their full potential. Capabilities theory proposes that the opportunity to reach the potential of each individual depends on related factors such as living conditions, socioeconomic status, access to education and health care. Less attention has been paid in the urban health literature to eudaimonic well-being, but there is growing interest in capabilities theory in conceptualisation of well-being in the built environment (Watson 2018).

Subjective well-being has aroused interest in many disciplines, particularly psychology, economics, geography, and sociology (Clark et al. 2008; Diener 2000; Schwanen and Atkinson 2015). Subjective well-being is defined as people's overall cognitive and affective evaluations of their lives (Diener et al. 2003). The cognitive element refers to broad appraisals, such as judgments about life satisfaction in global terms (life as a whole), and in domain terms (in specific areas of life such as work and relationships). The affective element refers to emotions, moods and specific feelings that reflect how people are reacting to or experiencing the events and circumstances in their lives (Diener et al. 2018). The different facets of subjective well-being are separable in factor analyses and have distinctive associations with other variables. The life satisfaction component represents a cognitive evaluation of various life domains (including health, finances, job, leisure, relationships) across a relatively long time period. The other two components are usually interpreted as affective emotions within a shorter time period. Positive Affect (PA) includes the person's desirable or pleasant emotions, such as contentment, enjoyment, and gratitude. Negative Affect (NA) refers to feelings experienced as unpleasant, such as anger, guilt, shame, worry, and sadness.

A large body of research has demonstrated that the three components of subjective well-being: life satisfaction, PA and NA, are independent factors that should be measured and studied separately. Further, these facets of well-being are separable in terms of what influences them, and in turn, what they influence (Diener et al. 2017).

16.2 Determinants of Health and Well-Being

Researchers have suggested several domains that may affect people's subjective well-being. At the individual level, predictors of subjective well-being include temperament, income and supportive social relationships. Higher subjective well-being has been associated with good health and longevity, better social relationships, work

performance and creativity. Positive emotions seem to be influenced by strong social relationships (Tay and Diener 2011) and negative emotions seem most related to internal and social conflicts (Stoeva et al. 2002). Individual life satisfaction is also strongly related to chronically accessible evaluations of one's health, income, and the quality of one's work (Schimmack and Oishi 2005). Healthier people are happier and more satisfied with their lives. Good health is associated with greater subjective well-being, while setbacks in health have negative effects (Ngamaba 2017).

At the community and societal levels, there are both universal and unique predictors of subjective well-being. Across diverse cultures, life satisfaction is positively associated with satisfaction of autonomy, relatedness, and competence needs (Church et al. 2013). Fulfillment of the basic needs featured in Maslow's theory has predicted higher life satisfaction across data from over 100 countries (Tay and Diener 2011). At both individual and national levels, income and household financial satisfaction are drivers of happiness and life satisfaction (Diener et al. 2013; Kahneman and Deaton 2010).

Research evidence suggests that subjective well-being is malleable at both the individual and societal level. Studies assessing the health and behaviours of groups with varying levels of subjective well-being show that high subjective well-being can lead to a number of beneficial outcomes, including improved health, supportive social relationships, work productivity and citizenship (Diener et al. 2013, 2015). People higher in subjective well-being are more likely to enact healthy behaviours such as exercising, not smoking, and wearing seat belts (Diener et al. 2015). A number of studies suggest a positive association between social connections and SWB is because people greatly value the quality of their social relationships; people who are higher in SWB are also more prosocial in their behaviour (Tenney et al. 2016).

Subjective well-being is strongly shaped by the objective conditions of people's lives. Social well-being theory, self-determination theory and other theories of human nature maintain that understanding what is meant by the "good things of life" is not universal; our understanding and evaluations of happiness and satisfaction depend on our cognitive and social capital, which are influenced by sociohistorical factors such as culture, religion, work, and intergenerational transfer. Capabilities theory proposes that the opportunity for individuals to reach their full potential depends on objective factors such as socioeconomic conditions, education and employment. According to proponents of capabilities theory, gender equality, trust, community engagement and freedom are among the conducive conditions a society should possess to provide opportunities for people to realise their full potential and to achieve the good things of life.

Recent longitudinal studies examining relationships among a broad number of well-being measures have reported evidence of strong positive associations between objective well-being and subjective life satisfaction (Western and Tomaszewski 2016). These strong linkages imply that if objective differences in well-being can be addressed, subjective well-being indicators such as life satisfaction and happiness can be improved for many people (Bellani and D'Ambrosio 2011).

16.3 Studying Well-Being in the Urban Context

A substantial amount of research has been conducted on the relations between urban environments and the broader concept of *health and well-being* among several disciplines, including public health, epidemiology, urban planning and the social sciences. Many of these studies has followed conceptual models aligned with social determinants of health (SDH) which propose that health is determined not only by biological factors but also by complex interactions between social, cultural and economic factors, the physical environment and individual behaviours (Northwood et al. 2018; Solar and Irwin 2010). These "non-medical" factors or social determinants of health account for 75% of the factors that influence health (Kirby n.d.). The SDH framework outlines how social, economic and political mechanisms (the context) produce a set of socioeconomic positions where populations are stratified hierarchically according to education, occupation and income, gender and ethnicity (structural determinants).

The context in the SDH conceptual model includes governance, macroeconomic policies, social policies, public policies and cultural and societal values (Solar and Irwin 2010). For example, the design and implementation of social policies on housing would be studied within the SDH framework as influencing the health and well-being of individuals in their urban communities. Where people live and work affects their health and chances of leading flourishing lives. Communities and neighbourhoods that ensure access to basic goods, that are socially cohesive, that are designed to promote good physical and psychological wellbeing, and that are protective of the natural environment are essential to health equity (Marmot et al. 2008).

There are a number of different institutions with projects worldwide that are concerned with the challenges posed by rapid global urbanisation, such as increasing socioeconomic disparities and increasing environmental stressors on health and wellbeing. The International Council for Science (ICSU) has a "Science plan on Health and Wellbeing in the Changing Urban Environment" that places importance on planning to meet the challenges of rapidly growing urban environments and "shaping cities for health" (Rydin et al. 2012). The London School of Economics and Political Science (LSE) has a project on "Cities, health and wellbeing"; the World Health Organization focuses on "national healthy cities networks" in Europe (World Health Organization Regional Office for Europe n.d.), and the Healthy People 2020 organisation monitors "health-related Quality of Life and Well-Being" in the United States (Healthy People 2020 n.d.). The major recommendations from these institutions are that we need to reduce inequalities in health outcomes, and build capacity at regional and national levels to promote improvements in urban health and wellbeing.

A recent study conducted a systematic review of published literature on objective and subjective measurement on health-related well-being in an urban context (Krefis et al. 2018). The authors used a conceptual model that relates determinants to four different sectors – individual, society, stressors, and morphology – and associates

these to objective and subjective indicators of health-related urban well-being. Objective indicators included information from external sources such as census data, income, crime rates, and environmental factors such as green space, noise or air pollution. Subjective indicators of urban health and well-being were largely based on social survey data and self-reported information such as subjective health status, mental health and emotional aspects of health. The literature search, which was focused on studies conducted in European cities or cities located in northern America, showed that subjective urban health and well-being was mostly measured by using the 12-item General Health Questionnaire (GHQ-12) and the short-form Warwick Edinburgh Mental Well-being Scale (WEMWBS) respectively.

The systematic review (Krefis et al. 2018) found that most studies on relations between urban environments and health and well-being describe or analyse either associations between urban determinants and health in general, specific urban determinants and health, or associations between urban environments and well-being. Fewer studies have investigating diseases and urban health and well-being. Traffic noise for instance, is known to be associated with several health outcomes, such as hypertension (Babisch et al. 2014). Air pollution has been associated with hospital admissions for cardiovascular and respiratory diseases (Bravo et al. 2017). Respondents to the US General Social Survey reported greater subjective well-being when surveyed on days with lower air pollution within their local area (Levinson 2012). The authors noted that there is a lack of interdisciplinary approaches that highlight the complexity or urban health and well-being, particularly the complexity of urban structures and dynamics and their influence on health and well-being.

Studies focused on associations between urban environments and health and well-being show the great importance of public parks (Larson et al. 2016) and green space usage (Bertram and Rehdanz 2015) to promote better health and well-being. The objective quantity of green space within a geographical territory has been found to be related to indicators of health and well-being, such as self-reported general health (Maas et al. 2006), mental health (Van den Berg et al. 2010), physical health (Pereira et al. 2013) and well-being (Krekel et al. 2016). Several reviews have addressed the influence of the urban neighbourhood environment on walkability (Saelens and Handy 2008; Talen and Koschinsky 2013), which has been shown to be associated with better physical health and quality of life (Inoue et al. 2010; Jaskiewicz and Besta 2014). Experimental and longitudinal studies show that people living in areas with more green space tend to have higher subjective well-being (Hartig et al. 2003; Velarde et al. 2007; MacKerron and Mourato 2013). One reason for these beneficial effects could be that communal green spaces facilitate positive social interactions which are associated with subjective well-being (Sandstrom and Dunn 2014). Place attachment has also been considered important to the overall well-being of an individual (Lewicka 2011); people may develop emotional attachment to urban green space, which may be conducive to their health and well-being. These and other studies add to the growing recognition that subjective spatial factors may be more important for well-being than objective ones; in the same manner as socio-economic and social capital factors are more important than spatial factors overall (Ala-Mantila et al. 2018).

16.4 Measuring Well-Being

Many of the tools and techniques for measuring well-being consider the term to denote that something is in a good state (Veenhoven 2007). It refers to the condition of an individual or group of people in their social, economic, psychological, spiritual and medical situation. It is a broad construct mainly divided into two large realms: objective and subjective well-being. Objective well-being is based on material, tangible and quantitative indicators that measure aspects of education, physical and built environment, community and economy (Measurement of Well-Being n.d.). The focus is on measuring hard facts in terms such income in dollars, living accommodation in square meters and other aspects like educational attainment, safe neighbourhoods, security and stability. Subjective well-being, on the other hand, focuses on soft matters such as satisfaction with income, and perceived adequacy of dwelling (Veenhoven 2007). It is based on an individual's perspective and gives importance to one's mental judgement, emotions and reactions of their own life.

Since the definition of "well-being" is a multidimensional construct, the fundamental challenge to measure it is the extent of diverse perceptions, disagreements over its definition and theoretical basis (Dodge et al. 2012; Deci and Ryan 2008; Linton et al. 2016). It is problematic as some investigators approach the topic from the perspective of basic human needs, while others investigate the capabilities of an individual, or give importance to individual preferences rather than the market behaviour (Linton et al. 2016). These multiple theories and varying perceptions have influenced the development and range of well-being measurement instruments (Linton et al. 2016). With the presence of ambiguity due to differing perspectives on the topic, absence of a universally accepted measure and a little guidance on the specificity of instruments within the growing number of instruments available, researchers have had to select the instruments familiar to them within their particular discipline, what is most often used by others or to create yet another new instrument (Linton et al. 2016).

Researchers Linton, Dieppe and Lara developed a "PRISMA" diagram that evaluates a systematic framework that includes a relation between themes, dimension and instruments (Linton et al. 2016). Themes represent a broader spectrum in terms of mental, social, physical, spiritual, economic well-being as mentioned above, dimensions are well-being aspects that clusters around these themes and instrument are measurement tools that investigate the dimension to locate it in one of the categories. For example, Keller's Symptom Questionnaire measures friendliness representing social and mental well-being where the questionnaire is the instrument, an aspect of friendliness is the dimension and social and mental characteristic are the themes of well-being. Based on this approach, they have listed around 100 measuring tools that also correspond with many of the measurement tools that Jarden presents in his 'Positive Psychological Assessment Workbook' (Jarden 2012).

The chapter lists an inventory of measuring tools based on the following identified themes:

Mental well-being concentrating on thoughts and feelings of an individual about their state of life is measured by tools such as the Happiness Measures, The Satisfaction with Life Scale, The gratitude questionnaire, The flourishing Scale, The Short Grit Scale, The Depression, Stress, Anxiety Scale, Brief Resilience scale, The Curiosity and Exploration Scale. These tools assess subjective qualities in terms of perceived happiness, life satisfaction as a whole, things an individual is proud of, positive relations, feeling of competence, perseverance and passion for long-term goals, the perception of social isolation, ability to recover from stress respectively (Jarden 2012).

Functional Assessment of Cancer Therapy-General Population†, Quality of Life Index-Generic, Quality of Life Inventory, and Valued Living Questionnaire evaluate social qualities in terms of family and partner relations. Kellner's Symptom Questionnaire, Warwick-Edinburgh Mental Well-Being Scale-Short and Social Well-being Scale, The loneliness Scale, and Quality of Life Inventory look at other aspects of friendliness, parenting and social actualisation, and perception of social isolation, in order to understand people's connection in their local and wider community (Linton et al. 2016).

For a broader understanding of subjective well-being, spiritual well-being plays a vital role that is concerned with meaning and connection to high power than oneself. For example, Spiritual Well-Being Scale measures existential well-being while Jarel Spiritual Well-Being Scale, Serenity Scale-Brief, Quality of Life Inventory weighs intangible notions of faith, inner haven, self-responsibility and philosophy of life. Other reflective characteristics of religious well-being, search for meaning, and self-discovery are found in instruments such as the Meaning in Life Questionnaire, The Spirituality Scale, and Valued Living Questionnaire (Linton et al. 2016).

Activities and functioning theme look at the relationship between time and action, in other words, involvement in specific activities to fill one's time and ability to undertake these tasks. The tools to determine this include 15D, Positive Mental Health instrument, CASP-19 (Control, Autonomy, Self-realisation and Pleasure), ICECAP-O, Quality of Life Inventory, Valued Living Questionnaire, Life Satisfaction Questionnaire-9, Nottingham Health Profile that measures the idea of control, creativity, eating, recreation, work and the time spent on vacations (Linton et al. 2016). Researcher Anadante Hadi Pandyaswargo also involves a time use study along with the participatory survey while conducting research in Indonesia for well-being. She uses a time-use diary that demonstrates how much time in a day each person is using activities, how often the activities are performed during weekdays and on weekends and which of the kind of basic needs (water, food, energy, jobs, and community environment) are involved in each activity. The objective of this time-use is to get information on how people use their time such as the presence of others, means of transportation, for whom the activities are done, emotional states, utilities involved. The intention behind this measure is to understand the relation where the time defines the intensity of satisfaction and the quality of each need.

External conditions and pressures in terms of environmental and socioeconomic concerns such as income and financial security is an important factor not only con-

fined to an individual but also represents wellbeing of a community, city and a country. 'Social equality index' assesses income statistics on registration of taxes and salaries. 'Index of Social progress' involves safety in the streets, political stability rule of law, unemployment (Veenhoven 2007). 'Economic Global Liveability Index' measures hard facts regarding infrastructure, environment, education through factors like financial security, the efficiency of public transport services, carbon footprint and literacy rate (Rozek et al. 2018). Besides these, other quantitative index includes 'Global Food security' providing a worldwide perspective on most and least vulnerability to food, 'Global Innovation Index' that particularly measures the innovations in the above sectors mentioned.

The tools measuring subjective well-being or measuring from an individual perspective involves verbal and written questionnaires as the main methodology while tools looking at well-being from a global point of view or objective well-being use government, institutional and demographic data. Also, some of these tools weigh more than one theme as in the case of Quality of Life inventory that surveys social and spiritual well-being as well as activities and functioning of an individual. Taken together, the weight of different themes through dimensions and tools and its property to overlap gives a better overview of a multidimensional "well-being".

Measuring well-being from a capability approach is a great challenge. The capability approach proposed by Amartya Sen extends the subjective well-being position that "well-being" is not only confined to a human's basic needs of food, shelter, work, wealth and education but the intangible qualities of feelings of satisfaction, pleasure or happiness form an integral part of larger understanding of one's capacity to attain these goals. But this approach, has two problems which he states as 'physical-condition neglect' and the 'valuation neglect'. The term 'physical-condition neglect' represents the adaptable nature of human beings in any condition, that is, the poor and sick can be relatively happy same as the rich and healthy individual. The term 'valuation neglect' means that valuing is a reflective activity that is what is worth as a long-term goal where happiness or sadness are evidences to achieve that objective (Richardson and Schokkaert 2019). Thus, the argument, in his capability approach is that by giving books to someone who cannot read or providing someone with a car at a place with poor infrastructure does not solve the problem of well-being but rather it is important to focus on what people can effectively be and willing to be, that is, on their capability (Richardson and Schokkaert 2019; Robeyns 2003).

To practise this approach in the space of capabilities, it is more important to understand its core concepts and the intrinsic differences between them. Three essential concepts proposed in Sen's approach are the following:

- Functioning and Capabilities: "A functioning is an achievement, whereas a capability is the ability to achieve. Functionings are, in a sense, more directly related to living conditions, since they are different aspects of living conditions. Capabilities, in contrast, are notions of freedom, in the positive sense: what real opportunities you have regarding the life you may lead" (Sen 1987). He explains this definition by giving a classic example of comparison between two persons

who don't eat enough to enable the functioning of being well-nourished. "The first person is a victim of a famine in Ethiopia, while the second person decided to go on a hunger strike in front of the Chinese embassy in Washington to protest against the occupation of Tibet. Although both persons lack the functioning of being well-nourished, the freedom they had to avoid being hungry is crucially distinct' (Robeyns 2003). In this example, both lack the achievement of being well nourished, the difference is that the protestor has the capability to achieve it but makes the choice of not to, while the famine victim lacks in terms of choice or opportunity, claiming that well-being only in terms of functioning is insufficient and it also includes freedom (Richardson and Schokkaert 2019). In other words, it is a combination of action and desire, that is the effective opportunity they want to engage in and be whom they want to be, influenced by its personal, social and environmental characteristics they are living in.

- Importance of Human Diversity: "Investigations of equality, theoretical as well as practical, that proceed with the assumption of antecedent uniformity (including the presumption that 'all men are created equal') thus miss out on a major aspect of the problem. Human diversity is no secondary complication (to be ignored, or to be introduced 'later on'); it is a fundamental aspect of our interest in equality" (Sen 1992). In other words, "Indeed, if human beings would not be diverse, then inequality in one space, say income, would more or less be identical with inequality in another space, like capabilities" (Robeyns 2003). He gives an example of a man and woman who have equal access to higher education, receives the same scholarship, and want to enable certain functionings in terms of being self-esteem, ambitious, independent and so on. But since the woman is discriminated in the labour market, she may not be able to achieve capability as the man in spite of having similar functioning. The point he is trying to make is that characteristic in terms of prejudices, social norms, habits and traditions need to be acknowledged in the space of capabilities.
- Basic and General Capabilities: The term Basic Capabilities that Sen is referring to is the freedom to achieve basic necessities for survival and escape poverty. In other words, "not so much in ranking living standards, but in deciding on a cut-off point for the purpose of assessing poverty and deprivation" (Sen 1987). The term is crucial to study to differentiate poverty analysis as a part of well-being analysis in developing countries whereas the more affluent countries would focus on capabilities that are less necessary for survival.

Looking at these core concepts, the approach gives more importance to opportunity than outcome, preferences and possibilities than acceptance thereby challenging the notion of neo-liberalist and utilitarian policies. Sen mentions that "if a person with low capability well-being is contented with her situation and requires only low levels of resources to reach high utility levels, then the capability approach will assess her capability level, and disregard her utility level" (Robeyns 2003; Alkire 2015). This ideology is clearly reflected in Bhutan's Innovative extension for Gross Happiness Index than Gross Domestic Product. This extension conceptualizes deprivation cut off as a sufficiency cut off, the poverty cut off as happiness

threshold and the national index in positive terms, that is wellbeing, rather than poverty challenging the ideology of utility and resources (Alkire 2015). To further understand this concept, sufficiency cut off is the datum in terms of attainment of his or her achievement. For instance, if a student has studied for 30 years where the cut off is 21 years, then it will be viewed as 21 years of sufficient education. Hence, it looks at the idea of equivalence which dissolves the hierarchical notion of being above or below. Another interesting aspect is the happiness threshold which states that "though many people are not wealthy they have achieved a kind of flourishing, fulfilment, and richness to life that is important. Though many are illiterate or have material challenges that need not necessarily be decisive for their happiness" (Alkire 2015) thereby giving greater importance to freedom of choice than acceptance.

Critical Capacity Approach proposed by Luc Boltanski and Laurent Thevenots: The term critical capacity means the ability to make your own decision with a legitimate justification of that selection/choice. Their theory explores the grammar of justification; the core element is that legitimate justification of what is right and wrong to say and to do must follow the common moral orders dominating the specific social situation. "These orders of worth are a set of social conventions that people can draw on, each with its own set of evaluative criteria and the related conception of 'the common good' "(Thorslund and Lassen 2016; Boltanski and Thevenot 2006). These concepts of worth represent the different worlds that we exist and co-exist in, that is, World of inspiration focusing on passion, creativity, dreams, enthusiasm, feelings and excitement, the Domestic world where the personal relationship in terms of generation, tradition, and hierarchy becomes the key element of justice and qualities of being distinguished, straightforward, faithful and have a character is being evaluated (Boltanski and Thévenot 1999). The other world represents the market world where the quantitative value for money is the judging criteria as the actions are inspired by the materialistic things. Competition, rivalry, vale, desire, selfishness becomes the key elements of justice (Thorslund and Lassen 2016) while the civic world focuses on the notion of human will as the citizen look for a common good than mere personal interest. The uniqueness of this world is to give important to beings who are not individual beings but are collective ones representing immaterial objects in terms of rules, codes and procedures. The industrial world 'is based on the efficiency of beings, their performance, their productivity, and their capacity to ensure normal operations and to respond usefully to needs' (Thorslund and Lassen 2016; Boltanski and Thevenot 2006) while The World of Renown relies on the response and reactions of the public to determine one's success where the ability to visible, getting attention, being recognised and famous are the qualities of worthy beings. As a whole, they claim that the modern society is not a single social order but an interwoven complex entity of these multiple orders in one single space and that same persons have, on the same day and in the same social space use different devices for assessment in form of justification, including the reference different types of worth, when they shift from one situation to another. To further understand this, he gives an instance of a school examination aiming at the pupil's capabilities can be said to be mainly industrial. In this situation, he states that one can criticise the pupil of displaying his family status and wealth of the

market world or criticise the teacher by accusing him or her on signs of luxury that is not relevant in this situation. Hence, the situation is criticised as unfair because the kind of wroth relevant inside one world has been carried to the other devaluing the agenda for which the test was meant for. Hence, by inter-crossing the six worlds mentioned above, a matrix can be drawn up to chart the most frequent criticisms in our society as "without this capacity, human relationships would simply be impossible" (Boltanski and Thévenot 1999).

16.5 Citizen Science Participatory Research in Urban Settings

Given these many views and measures of well-being, how can we capture the best of objective and subjective aspects of individual and collective well-being? Recent research focused on health literacy and citizen science methodologies may be a pathway to assessing subjective well-being in urban context.

The good health of all its citizens is one of the most effective indicators of a city's sustainable development. Health literacy entails knowledge, motivation, and competencies of citizens to access, understand, appraise, and apply information to manage health and interact with services related to health and well-being. Health literate citizens are an asset for communities and the cities at large – not only do they have resources to take personal responsibility for their own health and well-being, they can become involved as citizens in social and political processes that address health inequalities in access to care (Sorensen 2018).

One approach for mobilising multi-level efforts to improve citizens' health literacy and improve their environments to enhance health and well-being, is to engage in a process of citizen science. It is a participatory research approach involving members of the public working closely with research investigators to initiate and advance scientific research projects.

Increasingly, participatory approaches have been used to form meaningful citizen engagement in urban planning and health promotion strategies to improve built environment outcomes. For instance, citizen science and other participatory approaches have been utilised to make ecological observations, such as conducting air quality monitoring, and address a wide range of health and environmental justice challenges in community settings (Downs et al. 2010). Citizen science methodologies have embraced new technologies and community-academic partnerships in fields such as community mapping to document community conditions both spatially and visually to assist community residents in influencing place-based decision making. Participatory approaches such as photovoice use photographs to raise awareness about critical community issues and advance policy change.

A recent study of environmental hazards in an urban environment using a citizen science approach was able to demonstrate that community-based knowledge can contribute to and extend scientific enquiry, as well as help residents to leverage

action to address community concerns (Jelks et al. 2018). Another recent study (Chrisinger and King 2018) developed a methodology to integrate geospatial technology with biometric sensing within a previously developed, evidence-based citizen science protocol, called "Our Voice" to identify objective and perceived elements of the built environment that contributed to participants' subjective well-being. The researchers noted that such approaches present opportunities to engage the community members in collecting and analysing their own geospatial and biometric data to increase their understanding of their local environments and activate potential environmental improvements.

There is growing interest in the use of technologies, such as the "internet of things" (IoT), to measure and improve health and well-being of urban populations (Kamel Boulos and Al-Shorbaji 2014; Kamel Boulos et al. 2015). Citizens are connected via sensors and devices with the Internet, with the aim of improving their health and well-being. For instance, the health of older people in Barcelona, Spain has been targeted via a smartphone (Alcaraz 2014) that aims to create stronger networks, and "Games for Health" have been developed in Finland (Holopainen et al. 2016).

An innovative investigation called Urban Mind (Bakolis et al. 2018) used a novel smartphone-based tool to monitor the impact of nature on mental well-being in real-time and real-world urban environments. The researchers found that short-term exposure to specific natural features, such as being outdoors, seeing trees, hearing birds singing, seeing the sky, and feeling in contact with nature, has measurable beneficial effects on mental well-being. In addition, the researchers reported a lagged effect, that is, the beneficial effects could still be observed after several hours, even if the participant was no longer outdoors and no longer had access to nature.

These investigations represent successful examples of citizen science methodologies in urban environments and their findings have potential implications from the perspectives of health and well-being, urban planning and design. The data derived from these participatory approaches provide a much-needed evidence base that could inform future investments and policies on urban planning and design aimed at improving the health and well-being of populations within the built environment (Bakolis et al. 2018). Citizen science approaches combined with geospatial mapping maximise ecological validity because data are collected in real-world environments. Further, such designs allow for investigating the greater complexities of urban health and well-being using objective and subjective measures that capture dynamic information.

16.6 Conclusions

The various definitions and views around the term *well-being* addressed in this Chapter, show strong linkages between objective and subjective well-being. Addressing objective differences can improve the subjective well-being of an

individual in terms of the individual's health, life satisfaction and happiness. The definition has expanded beyond conveying elementary human needs to include cognitive, physical, mental as well as psychological well-being in order to understand factors which influence the holistic development of an individual. Accordingly, the studies suggest that subjective factors are equally or sometimes more important for well-being than simply the objective ones. Further, the research shows that 75% of "non-medical" factors in terms of complex interaction between social, cultural, economic and physical environment have more influence on the health of an individual's behaviour than biological factors. Spatial factors, especially the socio-economic and social capital factors, become important determinants of health and well-being in an urban context. The tools measuring subjective well-being investigating the broad spectrum of mental, social, physical, spiritual well-being mentioned above mainly involve verbal and written questionnaires as the main methodology whereas objective well-being uses government, institution and demographic datasets. Also, theoretically, the capability approach proposed by Amartya Sen gave emphasis to the notion of opportunity rather than outcome, possibilities rather than acceptance or in other words, the extension to capabilities that individuals should have to live fulfilling lives. Hence, taken together, the weight of different themes through tools, perspectives and its property to overlap gives a better overview of a multidimensional nature of "well-being".

Considering the acknowledged views on well-being, measures of well-being and recent research around health literacy, we further suggest the addition of citizen science based participatory methods as an effective tool to understand well-being in the contemporary city. A participatory approach where citizens can closely work with research investigators to uncover urban problems and prospects as opposed to being a volunteer for post-processing urban solutions, citizen science methodology can prove to be a vital resource for informing future investments and policies aimed at improving health and well-being of populations within the built environment. The approach emphasises a process-oriented methodology with a combination of scientific data to give more accurate and dynamic information to investigate the complexities revolving around the well-being of an individual. Understanding well-being from a holistic and humanistic perspectivewill benefit from the introduction of such participatory and democratic methodologies.

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