1 Introduction

Where people spend their time matters. Human development (even basic survival) depends on the conditions present in the places where one lives (Wong & Candolin, 2015). Life in a remote mountain area, an upscale suburb, or a congested inner-city neighborhood differs greatly. Likewise, living alone with a single parent tends to be very different from living in a multigenerational household where several siblings are present. Because we humans are conscious of our surroundings, we are to some extent a different person in each of those places. That does not mean that the conditions present in a setting fully determine how we act. Each of us has a personality that helps determine our identity and guide our behavior. Even so, each individual's personality and motivational dispositions are to some degree transformed as a consequence of the places where that individual spends time. The focus of this Element is on the social and physical conditions connected with home life and how those conditions are implicated in children's development.

Where children spend time – including time in the womb – penetrates to every aspect of their being, down to their chromosomes (Boyce et al., 2013; Fernald & Maruska, 2012). How children spend time in various settings can change brain architecture and even how children's genes speak to one another (epigenesis) (Fox et al., 2010; Kundakovic & Champagne, 2014). Not surprisingly, research has shown that the environment has a major impact on children's overall development. In this regard, it is extraordinary to look back in time and to imagine how children have spent time throughout the course of history. The life of hunters and gatherers was remarkably different from the life of most children today, with even three-year-olds spending time on an iPhone and mom ordering dinner using an app downloaded from the Internet. The places where children spend time vary a great deal even today. Household residences range from tiny huts with no modern facilities to mansions where almost everything is controlled by apps on smartphones. Surrounding communities vary from sparsely populated areas with limited amenities to dense upscale urban neighborhoods with a multiplicity of eating, learning, shopping, recreational, and work establishments as well as multiple options for transportation.

There have been extensive changes in family life over the past hundred years, with technological changes being the most obvious. Yet there have been other changes as well: (1) family sizes have decreased, (2) more mothers work full-time, (3) there is less time spent with extended family, (4) children spend more time in formal education and less time in natural surroundings, (5) homes are bigger, (6) homes contain far more amenities and materials, and (7) human communities have become more densely populated and more diverse. For many

children, there is remarkable instability in the social and physical accoutrements of daily life as they move from infancy and early childhood to adolescence and emerging adulthood (Seltzer, 2019). That said, life on earth today varies enormously. For example, the life of indigenous children in the Arctic only vaguely resembles the lives of native children in sub-Saharan Africa even today (Burnette & Figley, 2016; You & Anthony, 2012) – geography, like history with its technological advances, helps determine the way time is spent and what it means to someone.

A study using time-diary data collected from families across the United States showed how recent changes in family life can affect the ways children spend time and how this matters for children (Hsin & Felfe, 2014). When mothers worked full-time, they spent fewer hours per week in the presence of their children, most notably time in unstructured activities. Critically, more time spent in unstructured activity was related to both lower levels of child competence and higher levels of maladaptive behavior. Similar findings emerged in a nationwide study of Australian families (Craig et al., 2014). Working mothers spent less time overall with children. However, joint activity between working mothers and children was more active and child-centered. By contrast, paternal time providing direct care for children increased overall.

Children and parents are spending more time together at home nowadays, owing to the fact that children now spend more time inside the house than was true in the past (Mullan & Chatzitheochari, 2019). However, there has been almost no change in the amount of time children and parents are actually together at home. The increased presence of media devices has translated to parents and children (especially older children) spending more time in the same house together but not involved in joint activity.

Affordances of a setting are its functionally significant properties, considered in relation to a particular individual (Heft, 1993). An environmental affordance is something perceivable and psychologically meaningful to an individual. Accordingly, it can influence the individual's motivational dispositions (i.e., increase or decrease the likelihood an individual will engage in a particular action toward a psychologically meaningful goal). What is important to understand about environmental affordances is that they are not, in the deep sense, actual properties of the environment per se (Chemero, 2009). Rather, affordances pertain to the relations between features of a particular setting and the proclivities and capacities of a given individual. No two people "see" a setting in exactly the same way, nor do they see themselves as participants in a setting in the same way as others see themselves as participants in the same setting (Belanger & Coolen, 2014). For example, a stream may present quite different

affordances for water play for a child living in the rural Midwest, United States than a child living in downtown New Delhi, India.

As phylogenetically advanced creatures, humans are designed to learn from, utilize, and help reconstruct the places they inhabit. Although theory and research make reasonably clear that humans reflect the conditions present in the places they inhabit (Heft, 2018), we are only beginning to figure out how the various features of children's contexts matter for various aspects of their development. In this treatment of the environment for children, an effort will be made to review what is known about how environments affect the well-being of children. The review will include information from diverse sources, including governmental reports, reports from international agencies, empirical studies, qualitative accounts, meta-analyses, literature reviews, and policy documents. The focus will be on various settings and features of the environment (particularly the home environment) and what is known about how those settings/features affect children's behavior and development and how they affect the behavior of adults who provide care for children (particularly parents). Attention will also be given to how relations between environment and development may evolve during the first decade of life. The review will begin with a consideration of several broad frameworks that seem useful in understanding children's environments: (1) the concept of human habitats, (2) the dynamic interplay of social and physical features in human settings, and (3) systems theories. Special consideration will be given to features of human habitats that seem especially relevant to children's development (i.e., the penetration of media into daily life and the broad urban/rural divide that affects life throughout the world). Special consideration will also be given to parenting processes that influence children's well-being and to contextual challenges that affect both children and parents.

2 Habitat

As increasing numbers of humans have moved into densely populated areas that vaguely resemble human habitats of the past, concerns have arisen regarding how well humans are adapting to the conditions present in such crowded places (Besson, 2017). Habitats, and the settings that compose them, vary in both their structural features and the kinds of interdependence that exist among the actors that dwell in them. The features of particular settings convey multiple messages to those who inhabit them, messages that evolve over time. No two people experience (or make use of) a given habitat in the same way (Belanger & Coolen, 2014). A young child is likely to "see" a place differently than an

adult. A person of low social position is likely to see a place in a different manner than a person of power and wealth.

There are worries that the modern built environment often does not meet humans' instinctive needs, needs shaped by a lengthy evolutionary history. There are also worries about how people, children especially, perceive nature. Most ten- and eleven-year-old children living in a large urban city in the United States reported they had little experience of being in "natural settings" (Aaron & Witt, 2011). The children often equated "nature" with anything outside rather than limiting the concept of nature to settings that contained natural elements such as plants, trees, animals, and wild landscapes. Although most children felt that being in nature allowed them freedom to play, a number also expressed fears they might experience harm from wild things.

There is accumulating evidence that having "natural" elements in one's surroundings induces a sense of relaxation and well-being; and it increases one's proclivity to engage with objects and people (Dadvand et al., 2017; White et al., 2013). There is evidence that exposure to nature also increases brain volume (Dadvand et al., 2017, 2018). That said, the findings to date offer only limited support for the specific benefits derived from experience with nature (Stamps, 2004; Triguero-Mas et al., 2015). Interpreting findings is difficult because individual research projects have looked at quite diverse features of community environments (e.g., parks, indoor plants, access to forests), at quite diverse subpopulations, and at a multiplicity of outcomes using a diverse array of methodologic approaches (Hartig et al., 2014).

A factor that makes it particularly difficult to evaluate the "effects" of being in nature is that most studies have focused on short-term outcomes or processes (e.g., engaging in physical activity) that are presumed to drive longer-term outcomes (Hartig et al., 2014; Wheeler et al., 2010). Most research has not considered potential cofactors that may contribute to positive health outcomes (higher socioeconomic status [SES]; better air quality in places with more plant life; less crime and more social cohesion in neighborhoods that have more parks; greater access to recreational resources in addition to greater access to parks). Future research might focus on how particular features of habitats offer benefits to children and adults. An example would be to look at children's activities in settings that include elements from nature, with a view to determining how such elements impact various components of development (Cox et al., 2018).

When considering future research on how the features of settings promote or hinder child well-being, it might also be productive to look at features of current settings (e.g., residential dwellings, schools, neighborhoods, etc.) that seem antithetical to the needs of humans, based on how modern habitats tend to

diverge from the habitats ancient humans experienced. Studies in this genre have already shown that living in high-density neighborhoods with limited access to parks and with low levels of vegetation reduces the amount of physical activity for children and increases the likelihood of obesity (Ding et al., 2011). That said, social scientists are struggling to identify methodologies that can accurately characterize the quality and suitability of particular environments as they pertain to specific goals for humans (Han et al., 2018).

3 The Dynamics of Human Settings

As children age, they do more to select and construct the settings where they spend time (Scarr & McCartney, 1983). In effect, older children do more to fashion the affordances of the places they inhabit. Kyatta (2002) argued that how a particular feature of the environment is engaged depends on what an individual brings to it, including the individual's personality, prior learning, and history of social experience. Kyatta connected the idea of setting affordances to ideas about different types of actions people take – specifically, free or spontaneous actions, promoted actions, and constrained actions. The latter two types of actions are often informed by culture or social networks, which may help establish the value or appropriateness of the actions. When circumstances change, such as when a family moves or a community provides new types of infrastructure, the affordances of particular environmental features may change as well.

One of the greatest challenges in understanding how the features of a setting influence the developmental course for children is that settings have many features; and their co-occurrence is not random. Key conditions, like crowding and noise (see Sections 7.1.2 and 7.1.3 on noise and crowding respectively), often co-occur since both are more often present in settings inhabited by marginalized groups, such as those living in poverty or in stigmatized communities. Accordingly, some of the "observed" impacts of one feature likely reflect the impacts of co-occurring features. Critically, even when researchers have thoughtfully controlled for family contextual circumstances when looking at relations between a particular condition (e.g., crowding, noise), they have not actually examined how the co-occurrence of particular conditions may be implicated in a particular developmental outcome. Knowing that noise and crowding are likely to co-occur is one thing; actually documenting how their co-occurrence in a real setting affects a particular outcome for a particular group of individuals is another. Consider, as an example, living in a crowded, noisy home with insufficient heat and with smoke from a wood-burning stove. This is even more likely to pose threats to well-being than just living in a crowded house or

a noisy house or a house with internal smoke present. To better understand the influence of any of those conditions/affordances, one needs to take account of the other conditions and actually document their interplay.

Humans are complex creatures who react not simply to a particular feature in a setting but to the amalgam of conditions present. Thus, studies that look more deeply at the co-occurrence of two or more conditions both in and through time would seem useful in clarifying how any particular type of condition functions to affect the developmental course. Consider, as an example, the full set of social and physical features present in a home. A child who lives in a home with lots of games and learning materials, where parents spend time with the child in learning activities, and where there are good routines will likely have high learning motivation and good academic performance. There is likely to be co-occurrence of the three conditions, but co-occurrence is not inevitable; so, to understand how each condition functions to affect a child's motivational tendencies and competence, it would be useful to examine the interplay. Controlling for SES provides only a hint of how each condition works. Efforts in the direction of looking at multiple conditions in a habitat simultaneously have been made in studies of neighborhood conditions that facilitate children's outdoor play. Studies have included such things as traffic flow, availability of parks, amenities in nearby playgrounds, walkability of the neighborhood, and so on – albeit rarely have all such conditions been considered in the same study (Aziz & Said, 2012).

Looking at multiple features of human habitats to determine how those features function to affect human behavior, useful as it is, is still not enough. People are conscious actors; and how they feel about a place makes a difference in how they respond to its features. Scannell and Clifford (2017) make a strong case for how place attachment (to home, neighborhood, community, country) plays a role in how people feel about their surroundings and themselves. A strong sense of bonding with place appears to have a number of psychological benefits, including a more positive feeling about one's overall quality of life. In contrast to research showing that living in a space perceived as crowded increase one's stress, strong bonding to a place leads to a state of relaxation for children as well as adults (Korpela et al., 2002). That said, relatively little is known about the "benefits" of place attachment in children.

At present, there is limited knowledge about how children perceive the affordances of most settings, with research often addressing children in certain age groups only, children in certain cultural groups, and children from certain geographic locales. There have been a few studies that have focused on how children perceive their "home range" (i.e., the area around a child's residence where they spend time independent of an accompanying adult). A study of

nine- to eleven-year-old children who attended schools in three urban centers in New Zealand revealed that the size of a child's home range varied a great deal, with boys stating they had somewhat larger home ranges than girls – albeit not by much – and they were larger if the child had friends nearby (Hand et al., 2018). As expected, children with more restrictive parents and children who lived in neighborhoods with more traffic had smaller home ranges. Not surprisingly, because the children lived in urban areas, very few had home ranges that included woodlands and other natural habitats. As a consequence, the children's experiences and engagement with nature mostly involved time spent in home gardens and nearby parks rather than "wild nature."

Given that perceptions about environmental affordances involve the interplay of multiple personal and contextual conditions, the dearth of knowledge makes it difficult to draw strong conclusions about what matters with respect to the features of settings and how they matter. It would be useful if future research concentrated on how various sensory features of settings promoted positive motivational tendencies and enabled the development of various types of skills. It would also be useful if future research concentrated on social features of settings, particularly interpersonal interactions and group behavior in particular types of settings and how those behaviors promoted positive motivational tendencies. Increased knowledge in these areas would facilitate training for caregivers and for designing more productive settings for children.

4 Systems Theories

Humans are self-organizing creatures, with a multitude of skills and proclivities, which allows an outflow of approaches to engaging environments (Lewis, 2000). A preschooler may suddenly grab plush toys from the toy box and create an animal park where they are the zookeeper. A teen may join a social media platform, then send selfies to unknown others, hoping to gain "followers." For every individual, there is an ongoing emergence of new understandings of what a setting might afford, new activities to consider, and new identities to reflect on. In the process, things once seen as meaning very little can suddenly mean a lot. Given the complex nature of self-organization, the meaning of interplay between person and environment can be difficult to determine with precision. Over the past three-quarters of a century, a number of theories aimed at explaining the complex interplay of humans and their environments have emerged, theories that view humans as members of dynamic, constantly evolving systems involving people, places, and things. The focus of this section is to overview several systems theories and their potential applicability in

understanding how children engage with their environments and are shaped by those environments.

Most systems theories that are used to explain human behavior as it relates to environmental conditions derive from general systems theory. Two basic postulates from general systems theory help make clear why humans have such diverse responses to their environments: (1) multifinality – the idea that the same condition can lead to different outcomes or end states; and (2) equifinality – the idea that different conditions can lead to the same outcome or end states (Von Bertalanffy, 1968). The implications of these two basic principles of general systems theory will be seen repeatedly in Section 6 on caregiving processes associated with child well-being (e.g., certain risk factors can lead to a multiplicity of different parenting problems, and different risk factors can lead to the same parenting problem).

The broad literature on human systems makes clear that a given setting does not afford the same opportunities for exploration for all those who encounter it (Wachs, 2000). It is also the case that not everyone in a given environmental setting has an equal level of desire or wherewithal to exploit the affordances the setting provides. The organization of materials or the pace of action within a setting (or niche) may privilege some inhabitants more than others, as may social expectations and constraints (Raymond et al., 2017).

Ecological-developmental theories depict human beings as self-stabilizing. According to dynamic systems theory, individual behavior patterns tend to become organized around a small number of "attractors" (i.e., functionally connected ideas and behaviors that exert mutual control on each other). These attractors tend to be reasonably stable through time (Lewis, 2000). A habitat with consistent patterns of social and physical features will promote an individual's behavioral tendencies and maintain the individual's expectations as regards oneself and one's goal pursuits. However, if conditions change, it may disrupt patterns of behavior, moving the individual toward withdrawal or behavioral adaptation. Changes in behavior are likely when children experience trauma or family dissolution (De Bellis & Zisk, 2014; Hetherington & Stanley-Hagan, 1999; Laursen et al., 2019). Dramatic changes in home life (or broader conditions) can reduce the power of positive skills and dispositions to help children manage the new conditions. As it happens, relations between a particular risk condition and children's behavior are often nonlinear, with research showing different impacts for different children and variations in how long a particular outcome persists (American Psychological Association, 2008; Runyan et al., 2002). It also depends on what happens after the disruptive event occurs (Lamela & Figueiredo, 2016).

The features present in a child's life are not likely to show a linear relation with most developmental outcomes (e.g., having 500 children's books in a child's home is not likely to build the child's vocabulary that much more than having 100 children's books). According to Holland (1992), complex adaptive systems form and use internal models to anticipate the future, basing their actions on an assessment of the affordances present in any circumstance and their anticipation of expected outcomes. Humans are governed systems that operate in accordance with rules. Among the properties that determine how an individual will respond to contextual opportunities and constraints is nonlinearity; that is, different features of the settings that humans encounter become more or less ascendant as humans evolve and get more experience. As a consequence, the "rules" that govern interactions between a person and particular features of the environment are constantly evolving; and they help determine how the person develops. Holland contended that humans, as complex adaptive systems, engage in "a kaleidoscopic array of simultaneous interactions" (p. 19) with other systems. Thus, individuals need to adjust their beliefs and behaviors in ways that help them adapt to the conditions present in their environments. However, humans vary in their ability to reorganize their ideas and behaviors to meet the challenges and expectations present in the places they inhabit – with young children being particularly vulnerable in this regard. In vulnerable systems, even small disruptions can have fairly dramatic consequences. If the environment does not contain a sufficient number of supportive features or if it is unstable, it can be difficult for an individual to reorganize in ways that are productive for even short-term well-being (Folke, 2006).

When considering how features of settings where children spend time affect learning and development, it is critical to bear in mind that humans are composed of numerous developmental subsystems that are mutually influential. Cunha and Heckman (2007) provide evidence that various skills (a term that includes health, adaptive functioning, motivational proclivities, and competence) operate in complementary ways to increase overall skill development (or well-being more generally) – what they refer to as dynamic complementarity. The central argument is that strengths in one area of skill (e.g., cognitive competence) can help support the development of strength in another area of skill (e.g., adaptive coping). As a consequence of this process, children are likely to benefit most when their environments offer supports for multiple skills because development in each area of skill helps promote development in other skill areas. Likewise, when an environment does not offer supports for a particular skill area, more is left to the individual to compensate for the lack of support in a given area and greater is the likelihood that there will be less development in multiple skill areas. A second implication of the idea of

dynamic complementarity is that, when one component of a child's overall environment (e.g., the family) does not provide adequate support for skill development, the child will become more dependent on a second component of their overall environment (e.g., the school).

Sociocultural theory (Rogoff & Morelli, 1989) speaks to how children develop competencies and motivational tendencies pertaining to particular types of activities. Central to the theory is that competence development depends on the quality of mutual exchanges between a child and those who are more knowledgeable (most often adults) and on the nature of the objects and arrangements present in those exchanges. Highly productive "guided participation" results when adults offer interpersonal supports and carefully targeted challenges to a child. It can be difficult for young children to comprehend what is required in unfamiliar settings or when encountering unfamiliar people; thus, they may struggle to productively engage with the people and things in unfamiliar territory. Prior experience in a multitude of settings, under the guidance of caregivers who help children appraise situations carefully (i.e., promote key cognitive skills) and act with thoughtfulness and confidence (i.e., promote key motivational skills), can lead to the development of productive social and emotional skills (Goldstein & Lerner, 2018).

Because humans are complex adaptive systems engaged in ongoing interplay with complex environments, it is difficult to construct a theory that adequately explains why any given person behaves the way they do or precisely predicts an individual's developmental course. What seems clear, however, is that children need well-structured, manageable, and sustained exchanges with people and objects in their immediate surroundings. Otherwise, they experience stress and fatigue, which leads to withdrawal or negative patterns of behavior. Children also need the skills to cope with whatever challenges their surroundings present and that allow them to construct supportive life niches (Prilleltensky et al., 2001; Repetti et al., 2011). Even when children generally have the skills to manage the challenges present in the settings where they spend time, changes in their skills and in their environments lead to constant renegotiation with the physical and social elements present in those settings aimed at a good (aka adaptive) fit (Neufeld et al., 2006). As Holland (1992) would say, it is an ongoing rule discovery procedure, a procedure that is critically informed by the actual affordances present in the environment *in* and *through* time. Despite the limitations in theory and research as applied to person–environment interplay and how it impacts developmental course, what does seem reasonably clear is that optimal fit between person and environment can only occur when the affordances of the environment allow for the realization of basic human needs and the development of multiple types of targeted, complementary skills