



Analysis

Childhood Nature Experiences and Adulthood Environmental Preferences

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ABSTRACT

The importance of spatial, temporal and social contexts is increasingly acknowledged in the literature of modelling environmental preferences. However, the contexts of childhood nature experiences have not yet been included in economic models of environmental choices, despite significant findings from environmental psychology. We review the existing literature on childhood nature experiences to identify three constructs of the spatial, temporal and social contexts of childhood nature experiences. Based on these constructs, we suggest a dynamic model of environmental policy over time, in which past environmental policies indirectly affect current environmental policies. Using data from a discrete choice experiment, we establish the empirical link between childhood nature experiences and the economics literature of environmental choice behaviour and adulthood environmental preferences. The empirical findings of the present study qualifies the suggested dynamic model by showing that childhood nature experiences are correlated with pro-environmental preferences in the adult population - the same population that democratically decide on the current environmental policies. This may lead to self-reinforcing policy effects over time.

1. Introduction

Recently contextual factors such as spatial, temporal, social, cultural and attitudinal characteristics have gained increased attention in the modelling of individual preferences (Goulias and Pendyala, 2014; McFadden, 2014). The acknowledgement of contextual factors, describing contexts of choice, have been increasing over the past thirty years as a part of the choice modelling literature (Swait et al., 2002). However, the contextual background represented by experience, memory and history can as well be used in explaining some important behavioural phenomena within the neoclassical theory of choice behaviour and the measurement of welfare (McFadden, 2014). The literature on contextual background does not limit context to specific dimensions, but includes the entire framework of factors surrounding and influencing personal development and choice behaviour within a specific field (Goulias and Pendyala, 2014).

Preference-based methods for economic valuation of non-market goods have traditionally been based on the neoclassical assumption that consumers make choices by maximising own utility given a budget constraint. Moreover, it is generally acknowledged that characteristics such as age, gender, income, place of residence etc. can be included in choice models to control for heterogeneity in choice due to these parameters (Colombo et al., 2009). Contextual background has only recently gained attention in the literature of choice behaviour (Ben-

Akiva et al., 2012; Goulias and Pendyala, 2014; McFadden, 2014). Specific dimensions to describe context may include: a) time in terms of life course and historical time; b) space, including locations and neighbourhoods, and; c) society, including social networks (Goulias and Pendyala, 2014). If these factors are separable they can be included as explanatory variables in behavioural equations and thus in models describing choice.

A contextual background factor that has not received much attention in the literature is childhood experiences. Contexts provide different physical, cognitive and social experiences that play significant roles in childhood development (Bornstein, 2012; Bronfenbrenner, 2005). The influences and interactions between the individual and its surrounding environments are formalized in the ecological systems model developed by Bronfenbrenner (2005) which we elaborate on below. The timing of individual lives, also referred to as the onto-genetics, is often characterized in terms of childhood, adolescence, young adulthood, old adulthood and end of life. Each sequence is defined by its own rights, positions and roles (Goulias and Pendyala, 2014). Childhood, often defined as the age prior to 11, is a period of assimilating knowledge and understanding the natural world (Kellert, 2002; Wells and Lekies, 2006). It is acknowledged that the past shapes the future for individuals, and that the past shapes preferences, perceptions and attitudes even after controlling for variables such as age, gender, income, education and employment (Goulias and Pendyala, 2014). By

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identifying and exploring the context of childhood development it may be possible to explain part of adulthood preferences by an extended set of childhood-related explanatory variables.

McFadden (2014) suggests The Extended Neoclassical Model that expands the standard neoclassical consumer theory to allow for the influence of experience, memory and information. The extended neoclassical model is based on utility as a function of goods and services, experiences and unobserved tastes. Thereby we are able to include experience as a factor influencing the choice process, within the framework of neoclassical economics. However, measuring the contexts of development can be a challenge. Relying on self-reported experiences, especially those more temporally distant, to explain choice might imply a risk of present preferences influencing the reminiscence of past experiences (Wells and Lekies, 2006). This might be the reason why relatively little research has been engaged in the long-term effects of childhood experiences on adulthood preferences.

Over the last decade, hypotheses that environmental preferences are formed by a bundle of experiences and information obtained through childhood and adolescents have emerged. The life course perspective has been developed to analyze people's lives within structural, social and cultural contexts (Elder and Giele, 2009; Giele and Elder, 1998). The life course perspective describes the individual's life story using information of the contextual background of the individual. These trajectories can be seen as an extension of the 'snapshot' individual characteristics mentioned above, applied in choice models to describe heterogeneity in choice. Previously, life course trajectories have been used to analyze e.g., poverty, health, housing tenure, career and family life (See Wells and Lekies (2006) for an overview). Early childhood experiences can set a person on a life course trajectory of evolving environmental preferences and behaviour (Wells and Lekies, 2006). Direct nature experiences involving unstructured physical contact with natural settings and non-human species can play a significant role in the development of adulthood relationship to the natural world (Kellert, 2002). However, direct nature experiences in childhood only occur if the proximate environment of the individual allows for such experiences. Very often the opportunities for direct nature experiences are determined in environments more distal to the individual e.g. as a spin-off from environmental policies and urban development (Pyle, 2002).

Despite the findings of the association between childhood experiences and adulthood environmental preferences from Wells and Lekies (2006) and Kellert (2002) among others, and the extended neoclassical framework (McFadden, 2014), the link between childhood nature experiences and adulthood environmental choice behaviour has to the authors' knowledge not yet been investigated. In this paper, we present a first and novel attempt to bridge this apparent gap between the literature of childhood nature experiences e.g. from environmental psychology and the environmental preferences often investigated in the choice modelling literature. We restrict the contextual temporal dimension to early childhood (prior to age 11) and focus on three aspects of nature experiences: 1) frequency of use, 2) social relations and 3) preferred playground setting.

The paper is organized as follows. First, we introduce the ecological systems theory as an underlying framework for the analysis. Second, we review the existing literature on childhood nature experiences and link it to the economics literature of choice behaviour in order to construct three hypotheses concerning the relationships between of childhood nature contexts and adulthood environmental preferences. Third, we suggest a model for how the relation between childhood nature contexts and adulthood environmental preferences might have implications for environmental policy over time, within the framework of ecological systems theory. Fourth, based on data from an empirical Discrete Choice Experiment (DCE) concerning preferences for improved water quality, we investigate whether the three contextual factors of childhood nature experiences are associated with the adulthood environmental preferences, by including them as interactions with the water quality variables in a discrete choice model. Fifth, based on the policy

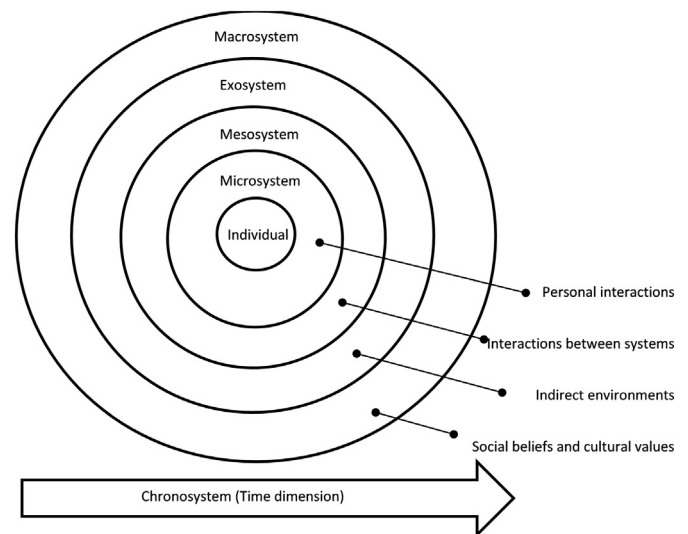


Fig. 1. Model on the ecological systems theory (based on Bronfenbrenner (2005)).

model and the results of the empirical model we discuss the implications in terms of dynamic relationships in environmental policy over time.

2. Ecological Systems Theory

According to the ecological systems theory, developed by Urie Bronfenbrenner over an extended period of over 25 years (Bronfenbrenner, 1979; Bronfenbrenner and Morris, 2006), individuals develop in multiple environmental contexts. Context in individual development is characterized by a multilevel nested hierarchical structure of systems as shown in Fig. 1.

The theory evolves around the idea that individuals develop through their interactions with the surrounding environments at multiple levels. The most proximal system is the microsystem in which the individual interacts with the environment in personal and direct processes. The microsystem is most often comprised of small immediate environments like family, neighbourhood, and play areas. More distal environments include social systems all embedding and affecting the individual but at increasingly distal levels: a) the mesosystem, in which the microsystems of the individual interacts (e.g. parent-school relations); b) the exosystem, including mass media and local policies and; c) the macrosystem, which is the most distal system, including the societal beliefs, lifestyles and life course options. A constant interaction occurs between the nested levels in the ecological systems. Influence on development is strongest at the microsystem level. However, more distal systems such as the macrosystem still interact with the inner levels e.g. in terms of values and beliefs derived from the macrosystem, but experienced in the microsystem (Bornstein, 2012). To have an effective impact on childhood development, interactions between the individual and the systems must occur on a fairly regular basis over extended periods of time (Bronfenbrenner and Morris, 2006). In addition to the development through interactions with the surrounding environments, the ecological systems model acknowledges the dimension of time, in what is referred to as the chronosystem. The chronosystem refers to the timing of specific events during an individual's development, and the historical context in which the individual develops. To increase understanding of the development of environmental values, beliefs and behaviour, we must increase our understanding of the ecological system present during childhood development (Kellert, 2002). However, Bronfenbrenner (1979 and 2005) mainly employs the terms ecology and environment to describe social relationships e.g. in families but not with a reference to the natural environment. Nevertheless, the

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