

Chapter 6

Values, Beliefs and Environmental Citizenship



Audra Balundė, Mykolas Simas Poškus, Lina Jovarauskaitė, Ariel Sarid, Georgios Farangitakis, Marie-Christine Knippels, Andreas Ch. Hadjichambis, and Demetra Paraskeva-Hadjichambi

6.1 Introduction

Persuading people to become Environmental Citizens is crucial for addressing current environmental issues. It is a necessary condition for sustainability and has been identified as one of the EU's priorities (EEA 2015; EU 2013; Dobson 2007). Educating individuals and communities to become Environmental Citizens is one of the challenges of our time if we are to achieve sustainable growth and preserve our natural environments. Environmental Citizenship as a complex of actions and behaviour is based on the acknowledgement of the balance of rights and responsibilities in fairer human-environment bonds, which tend to transcend national and generational boundaries (ENEC 2018). Specifically, Environmental Citizenship

A. Balundė (✉) · M. S. Poškus · L. Jovarauskaitė
Institute of Psychology, Environmental Psychology Research Centre, Mykolas Romeris University, Vilnius, Lithuania
e-mail: audra.balunde@mruni.eu; mykolas_poskus@mruni.eu; lina.jovarauskaite@mruni.eu

A. Sarid
Beit Berl College, Department of Education, Beit Berl, Israel
e-mail: ariels@beitberl.ac.il

G. Farangitakis
Argyroupolis Center for Environmental Education, Argyroupolis, Greece
e-mail: secretary@kpea.gr

M.-C. Knippels
Freudenthal Institute, Utrecht University, Utrecht, The Netherlands
e-mail: M.C.P.J.Knippels@uu.nl

A. Ch. Hadjichambis · D. Paraskeva-Hadjichambi
Cyprus Ministry of Education and Culture, Nicosia, Cyprus
Cyprus Centre for Environmental Research and Education, CYCERE, Lemesos, Cyprus
e-mail: a.chadjichambi@cytanet.com.cy; demhad@ucy.ac.cy

© The Author(s) 2020

A. Ch. Hadjichambis et al. (eds.), *Conceptualizing Environmental Citizenship for 21st Century Education*, Environmental Discourses in Science Education 4, https://doi.org/10.1007/978-3-030-20249-1_6

refers to pro-environmental actions both in public (consumption patterns, political actions, active participation, etc.) and private (recycling, conserving resources, etc.) domains performed by citizens and induced by the belief in fairness of the distribution of public resources (Dobson 2007). It becomes increasingly obvious that efforts need to be made on a local level (regional, national, in one's home town, in one's neighbourhood, etc.) so that we can achieve global sustainability goals. Environmental Citizenship is an umbrella term that encompasses an array of characteristics such as the skills, knowledge, attitudes, values and beliefs needed to address environmental problems (Takahashi et al. 2017). Thus, educating European society to become Environmental Citizens is a crucial step that needs to be taken quickly, systematically and with a strong evidence basis for actions. If we are to educate individuals not only to act pro-environmentally but also to understand the urgency of environmental issues and to integrate pro-environmental actions into the core of their political participation and citizenship expressions, we need to tackle all of the aspects of Environmental Citizenship. Moreover, all aspects that comprise Environmental Citizenship need to be tackled specifically and with precision. In this chapter, we will discuss how beliefs and values relate to Environmental Citizenship and how we can target these aspects in order to educate Environmental Citizens in Europe and worldwide.

We will give particular focus to beliefs, because they are arguably at the core of all human behaviour (Fishbein and Ajzen 2011). There are many ways individuals form beliefs, but belief formation is mostly a function of the interaction of environmental factors and innate traits (Poškus 2017; Fishbein and Ajzen 2011). Thus, beliefs can be formed through systematic means, such as education, but they can also develop naturally through observing one's surroundings. However, the end result will still be different for different individuals, since individual characteristics and subsequent subjective experiences and interpretations influence the way we perceive the information that we receive from the external environment (Poškus 2017).

To address the individual difference perspective, we will also discuss values as individual characteristics or, to put it in evolutionary terms, as factors that lead to typical strategies to achieve the proximal and ultimate goals (Poškus 2018; Lindenberg and Steg 2013) that are formed through the interaction between individuals and their environment (Feather 1979), as well as through the socialisation process. Values can function as heuristics that determine how individuals approach situations and what goals they put above others (Schwartz 1992). Values can potentially be formed and changed through education (Myrny et al. 2013; Krishnan 2008; Chatard and Selimbegovic 2007). This is key for educating Environmental Citizens, since, despite some innate components that are associated to personality traits, most individuals have the capacity for change in their value orientations, adapting them based on how their environmental influences change. For example, Inglehart and Baker (2000) in their study of 65 societies have found that economic development was linked to value shift towards '...increasingly rational, tolerant, trusting, and participatory'. For Environmental Citizenship to thrive, we need to make salient the appropriate values and provide alternative, environmentally friendly behavioural strategies that lead to environmentally friendly belief formation when faced with

unfamiliar situations where decisions need to be made (Lindenberg and Steg 2013). Thus, making pro-environmental values salient has a potential to create coherent moral frameworks that shape behaviours in everyday situations that would result in one being an active Environmental Citizen.

6.2 Relating Values and Environmental Citizenship

Environmental Citizenship as a holistic framework of addressing environmental problems has only begun to be investigated through the lens of values (Jagers and Matti 2010). This is due to the fact that Environmental Citizenship is a relatively new concept of defining pro-environmental actions and their driving forces, and it is a unifying term for a holistic pattern of pro-environmental behaviours (ENEC 2018). Furthermore, Environmental Citizenship at its core is based on such values as the fairness of the distribution of environmental resources, civic participation and co-creation of sustainability policy, among others (Schild 2016). With this in mind, there are studies that relate separate components of Environmental Citizenship (various pro-environmental actions) with values (Steg et al. 2014a, b; van der Werff et al. 2013, 2014); while values, in turn, touch some of the societal motivations and beliefs (i.e. social norms, Abrahamse and Steg 2013) that are key for Environmental Citizens (Stern et al. 1999). What needs to be emphasised is that Environmental Citizenship has a strong political and societal basis, as well as a basis in education. It is not enough that one should act pro-environmentally, one needs to have a pro-environmentally oriented understanding and a frame of mind that compels one to act pro-environmentally.

Different patterns of value orientations can lead to different behavioural strategies and ways that individuals attain their proximate and ultimate goals (Huang and Bargh 2014; Lindenberg and Steg 2013). All values can be roughly classified into either self-transcendence or self-enhancement, openness to change values or conservation values (Schwartz 2012). Self-transcendence values encompass goals related to selflessness and helping others; these values have an opportunity to be at the forefront of one's actions if one perceives their environment to be safe. To put it in evolutionary terms (Fischer 2017), self-transcendence goals are adaptive when one has resources which can be shared in order to gain favour from the community. Self-enhancement values encompass goals that lead to accumulation of resources through self-serving means; these values are most adaptive in scenarios where the environment is unstable and one's security is unclear or under threat. Openness to change values encompass goals that relate to experiencing novel stimuli and having new experiences, which in evolutionary terms means seeking out new opportunities and engaging in high-risk high-reward behaviours that might lead to favourable proximal outcomes (Poškus 2018). Conservation values encompass goals of stability and conformity that lead to tried-and-true outcomes and thus are low risk with consistent rewards. It must be noted, however, that adaptive traits lead to outcomes that are adaptive for most individuals most of the time, but not necessarily all indi-

viduals all of the time (Dawkins 2006); thus, there are instances where individuals may hold values that are seemingly in contradiction to their environment. All of these four broad categories are comprised of more goal-specific values that address specific domains that have a closer relationship with behavioural tendencies.

Despite values being quite stable, there is evidence that values are malleable, especially as a result of life-changing events (Bardi and Schwarz 2013; Bardi and Goodwin 2011; Bardi et al. 2009; Maio et al. 2009; Rokeach 1968), and all individuals have all values to a certain degree (Schwartz 2012). Individuals form their specific value orientations through choosing what is most adaptive in their present environment and what maximises their fitness (Bardi and Schwarz 2013; Bereczkei et al. 2010; Bardi et al. 2009). When a certain pattern of values is formed, individuals use this framework to understand and interact with unfamiliar environments and situations, all the while adjusting their values accordingly. In other words, individuals' existing value orientations and the environmental stimuli they encounter function reciprocally, one affecting the other and vice versa. In this sense, values as a framework for interacting with the external environment have the potential to address all relevant areas of Environmental Citizenship.

Given that the concept of Environmental Citizenship encompasses not only pro-environmental actions but also the beliefs and the motivation or mindset that lead to those actions, activating relevant pro-environmental values can lead to positive changes in all aspects of Environmental Citizenship since values are goal specific and not behaviour specific (Steg et al. 2014a, b), i.e. one's goal can be to save the environment, and this acts as an heuristics in acquiring new beliefs and acting in novel situations in a way that is congruent with this goal (Bardi and Schwarz 2013). There is therefore the potential for a simple behavioural spillover (when change in one's behaviour leads to changes in other behaviours) (Thøgersen 2012), where moral frameworks develop in order to minimise the cognitive load in making behavioural decisions, and also for holistic attitudinal shifts towards more sustainable lifestyles.

6.2.1 The Value Basis of Environmental Citizenship

In the broadest sense, values can be categorised into groups that reflect the dominating attitudes that drive one's behaviour and form one's worldview (Kaltenborn and Bjerke 2002; Kortenkamp and Moore 2001; Thompson and Barton 1994; Dunlap and Van Liere 1978). In light of the contemporary environmental issues, three broad views can be identified: anthropocentrism, ecocentrism and technocentrism. Anthropocentricists have in general a self-oriented view of the world and see it as something that belongs to them and others. However, through the increased understanding of human-nature relationships and through the realisation of contemporary environmental issues, a more environmentally oriented outlook has emerged, where humans are viewed as a part of the environment while taking environmental well-being as the ultimate goal. The aforementioned view that emphasises environmental

needs above human needs (while not ignoring humans) is termed as ecocentrism. Lastly, technocentrists view humans as masters of nature and believe that nature needs to be preserved through modern technology and purposeful effort (Bailey and Wilson 2009; Papert 1988; O’Riordan 1981). While technocentrism might seem a promising worldview for the modern individual, there is no clear consensus whether being more ecocentric or technocentric would lead to better environmental outcomes, and in some cases, the line between these two can become blurred. All of the aforementioned views are reflected in contemporary measures that are used to assess values relevant to pro-environmental behaviour and Environmental Citizenship (Nordlund and Garvill 2002, 2003).

To date, there is no single study that can lend an insight into how value orientations relate to all the components of Environmental Citizenship. However, there are many studies on how values relate to a very important component of Environmental Citizenship – pro-environmental behaviours (Steg et al. 2014a, b; Thøgersen and Ölander 2002). While, at first, researchers explored the possibility of all values proposed by Schwartz to be related to pro-environmental actions (e.g. Schultz and Zelezny 1998; Karp 1996), later studies settled on four value orientations, namely, hedonistic, egoistic, altruistic and biospheric values (Steg et al. 2011; Nordlund and Garvill 2002; Stern et al. 1999; etc.). These values seem to have the most practical significance and make the most theoretical sense.

Hedonistic values are usually negatively related to pro-environmental actions, since they are often in direct conflict with environmental outcomes (Steg and De Groot 2012). For example, a strongly hedonic individual will tend to sacrifice the environment for their own pleasure, since environmental goals are not at the forefront of their behavioural decisions. Despite that, it is possible to align hedonic values to lead to environmentally friendly outcomes, for example, by providing pleasurable incentives for them; however, these types of solutions would be in conflict with the idea of Environmental Citizenship, since it assumes an intrinsically pro-environmental value basis. Egoistic values, just as hedonic values, are usually negatively related with pro-environmental actions (Steg and De Groot 2012). However, there might be situations where egoistic motives lead to seemingly altruistic actions if they produce a desirable outcome to the individual (Dawkins 2006), because egoistic values drive individuals towards self-serving strategies of increasing individual fitness and maximising one’s resources, often at the expense of others or at least without regard for them.

Altruistic values drive behaviours that lead to self-transcending outcomes that, although lead to a loss of individual resources, do not necessarily lead to a loss of comparative fitness. Altruistic values are usually related to all socially desirable behaviours and therefore to pro-environmental behaviours as well (Steg and De Groot 2012). However, altruistic values are not the best predictor of pro-environmental actions, since altruism is a general strategy that might encompass actions that lead more to an increased feeling of well-being for other individuals, but not necessarily to the environment. In simpler terms, altruism is more people oriented than environment oriented.

Biospheric values can be regarded as a subset of altruistic values or as a very closely related construct that results in actions that lead to environmentally favourable outcomes (De Groot and Steg 2009; Stern 2000). Some research, however, has provided compelling evidence for interpreting biospheric values as a separate construct on their own since they provide unique variance in explaining pro-environmental behaviours (De Groot and Steg 2007). As a matter of fact, biospheric values are the best predictor of pro-environmental actions out of all proposed values that might relate to it; thus, they are often put at the forefront at pro-environmental behaviour research and often have a prominent role in predictive models (e.g. Values-Belief-Norm (VBN) theory hedonic, Stern 2000; Stern et al. 1999; Values-Identity-Personal (VIP) norm model, Van der Werff and Steg 2016).

Individuals can hold varying patterns of values and, therefore, there is a multitude of ways of constructing a strategy for behaviour (Bardi and Schwartz 2013; Lindenberg and Steg 2013). It seems reasonable that in order to promote Environmental Citizenship, one should aim for a specific pattern of values, where altruistic and biospheric values work in tandem to create a socially engaged and environmentally conscious individual (Fig. 6.1). As mentioned earlier, value change is possible only under specific conditions, e.g. during extreme changes in one’s life, when it is required to adapt to new circumstances. Therefore, value change requires systematic efforts. The desirable pattern of values should be constantly and consistently reinforced, either through social persuasion or through infrastructural solutions, since any one-time intervention towards values is likely to be short-lived (Bardi and Goodwin 2011). To put it simply, the context of an individual needs to be consistently reinforced and even requires upholding certain values in order to

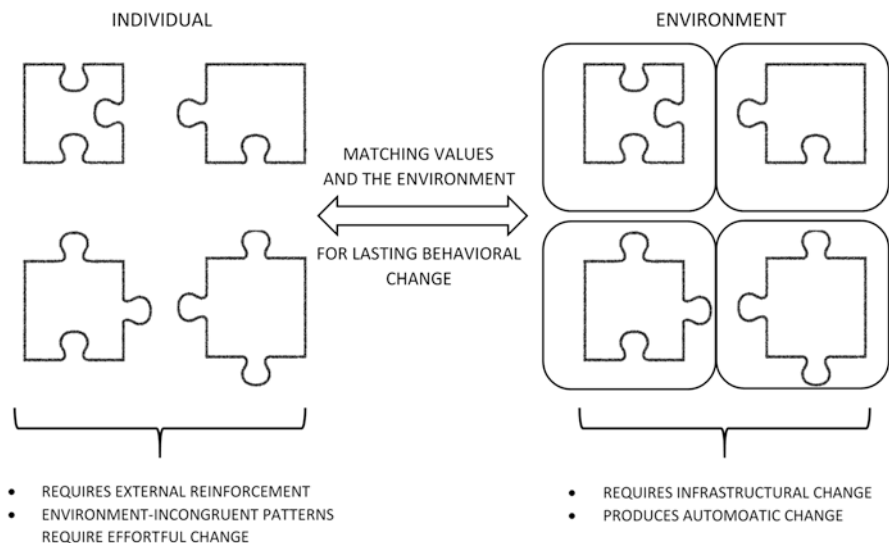


Fig. 6.1 Conceptual model of interaction of individual value patterns with the environment. The environment determines the value pattern that is most likely to emerge automatically

achieve a lasting change in individual values, since values function just as any other cognitive schema that influences behavioural choices based on environmental cues (Bardi and Goodwin 2011). What are the implications of the knowledge on value stability/change in fostering an environmentally conscious society? First, an education system that consistently reinforces desirable pro-environmental values is needed. Second, the environment needs to reinforce and enable pro-environmental behaviour and in turn provides reinforcement for pro-environmental values.

6.3 Relevance of Belief Formation on Environmental Citizenship

There are two popular ways of thinking about beliefs. The first one is the conventional way of understanding beliefs, for example religious beliefs, political beliefs and other socially and culturally relevant beliefs. This type of understanding implies that there is no specific perception about behaviour-outcome relations but rather a set of convictions that one might hold. The aforementioned understanding is more akin to how people talk about beliefs in their everyday lives. In psychological terms, beliefs can be defined as subjective probabilities of specific actions leading to specific outcomes (Fishbein and Ajzen 2011). This definition emphasises the subjective cognitive component of beliefs and is very behaviour specific. On the one hand, we have a lay understanding that encompasses a set of beliefs, while on the other hand we have beliefs as behaviour-specific subjective probabilities of actions leading to certain outcomes. In this subsection, we will discuss Environmental Citizenship in the context of both definitions; however, we will be focusing more on the cognitive definition of beliefs, as individual beliefs are more prone to change and are more malleable through education and experience.

From the cognitive perspective, beliefs can be classified into being observational, inferential and informational (Fishbein and Ajzen 2011). Observational beliefs are formed through the direct observation of one's actions leading to certain outcomes and are therefore based on experiential factors and hands-on activities. Inferential beliefs are formed through observing others' behaviour and making inductive conclusions on how certain actions lead to certain outcomes; therefore, these beliefs are a product of observed examples of behaviour. Lastly, informational beliefs are formed indirectly through information that is learned from external sources such as teachers, documentaries and public service announcements (PSAs) and without directly performing any actions or observing the outcomes of actions being performed. Therefore, informational beliefs are best formed through educational means (although it must be stressed that education should not be reduced to only providing information, and hands-on experience is also key in providing high-quality education).

An important point about belief formation is that beliefs are not assumed to reflect objective reality (Fishbein and Ajzen 2011). It is crucial to understand that

both personal experiences and the observation of others' behaviour can lead to beliefs that are not necessarily reflective of objective reality, and while these beliefs can be useful in a practical sense and seem to predictably lead to desirable outcomes, this does not imply that the beliefs themselves are factual. For example, one might have a subjective belief that bottled water is healthier than tap water, and their belief would be reinforced with positive experiences of drinking bottled water. The subjective component of beliefs is further emphasised in the case of informational beliefs, since these beliefs are formed without any direct observation of outcomes of actions and thus have the most degrees of freedom where information that is not factual can be transmitted and internalised.

The subjective nature of beliefs has tremendous implications for Education for Environmental Citizenship (ENEC 2018). First of all, education that aims at creating Environmental Citizens needs to address all three channels of belief formation; thus, individuals need to be exposed not only to information but need to experience the outcomes of their actions first-hand and see similar experiences in others. This calls for a systematic and integrated approach that presents congruent information through all available channels: educating Environmental Citizens requires not only education but also infrastructural, societal and political changes, all of which should be factual and based on a common framework of transmitting information that promotes the components of Environmental Citizenship.

It is not only crucial that existing efforts of promoting Environmental Citizenship be factual and congruent among various channels of information, but it is also especially important to counteract the belief formation that is not based on facts which can mislead individuals into acting against the principles of Environmental Citizenship. Thus, when addressing beliefs, we not only need to form them, we also need to dismantle existing incorrect beliefs and we need to accomplish this not through coercive means, but through gentle nudges, factual information, direct experiences and activities that show that pro-environmental actions are demonstrably beneficial and desirable.

6.3.1 Predicting and Explaining Environmental Citizenship Through Beliefs

Beliefs are at the core of two predictive models that are largely used to predict and explain actions relevant to Environmental Citizenship. These models are the Values-Belief-Norm (VBN) model (Stern 2000; Stern et al. 1999) and the Theory of Planned Behavior (TPB) (Fishbein and Ajzen 2011; Ajzen 1991). Both of these models are useful in pro-environmental behaviour research; however, the VBN model was created as a specific model for predicting and explaining pro-environmental actions, while the TPB is a general model for predicting and explaining behaviours.

The VBN model integrates both values and beliefs and infers a causal relationship between them. While one can make a good case for values and beliefs having reciprocal relationships, in the VBN model, values act as predictors of normative beliefs which, in turn, predict moral norms that form behaviour. Thus, in this model, values are assumed to be linearly associated with beliefs and affect them directly (Stern et al. 1999). This allows for a practical understanding of how educational strategies could be tailored towards value education, i.e. educational strategies could be targeted at instilling pro-environmental values in the hope of individuals developing pro-environmental moral beliefs that would lead to actions congruent with Environmental Citizenship.

In the TPB model, three types of beliefs are used to predict behaviour: attitudinal beliefs, normative beliefs and control beliefs (Fishbein and Ajzen 2011). These beliefs then form attitudes, personal norms and perceived behavioural control, all of which are used to predict behavioural intention, which, in turn, predicts behaviour (Fishbein and Ajzen 2011). Attitudinal beliefs reflect the subjective appraisal of behaviours and their favourability and desirability. Normative beliefs reflect the perceptions of whether behaviours are desirable and prevalent, as well as which behaviours are punished or rewarded. Lastly, control beliefs reflect the subjective perception of whether actions would be easy to perform and whether these actions are afforded by the available environment. The TPB offers an applicable framework of how specific behaviours can be targeted through forming all of the aforementioned types of beliefs.

The three types of beliefs used in the TPB model and the three types of belief formation mechanisms all need to be utilised in order to most effectively promote Environmental Citizenship. For example, attitudinal beliefs need to be formed not only through information that certain behaviours are worthwhile but also by providing first-hand experience of how certain pro-environmental actions can be pleasurable. Similarly, it is not sufficient just to tell someone to recycle (forming informational beliefs), but it is necessary to show good examples of recycling (forming inferential beliefs) and provide opportunities to recycle (forming observational beliefs). Thus, the TPB allows for a structured way of addressing education for Environmental Citizenship and ways of forming values that would lead to favourable outcomes.

6.4 Using Values and Beliefs to Understand and Promote Environmental Citizenship

While the VBN model proposes a direct relationship between values and moral beliefs, the relationship between values and beliefs should not necessarily be conceptualised in this way. We assume that values might share a goal component with beliefs in the sense that behaviour-specific beliefs relate to desirable outcomes and personal values, which, in turn, dictate the desirability of outcomes. In other words,

our values shape the way we form beliefs, while our beliefs form our values as well – the interaction is bi-directional and both beliefs and values have the potential to influence one another (Goodwin et al. 2012). However, we must stress that values do not change easily or chaotically. Value change needs to be addressed in a systematic manner, activating pro-environmental goals without activating conflicting values (Bardi et al. 2009; Maio et al. 2009).

Additionally, bearing in mind that all individuals possess all values to a certain extent (Schwartz 1992), it might be useful to regard values not only as predictors of behaviour per se but also as moderators for the functioning of beliefs as well. When one regards values as individual difference variables, one introduces a new layer of interaction in promoting Environmental Citizenship. Values have the potential to be changed in order to help people develop more favourable belief-forming strategies that would lead to increased Environmental Citizenship. There is therefore a great deal of potential and practical utility in looking at Environmental Citizenship through the context of the TPB while regarding personal values as individual difference variables that moderate the functioning of the TPB.

6.4.1 Future Directions and Practical Recommendations

Europe is a diverse region with many unique cultures. However, some values, beliefs and goals are shared among all European citizens, and promoting Environmental Citizenship is one of them. The common European goal of promoting Environmental Citizenship could, arguably, be best achieved through the understanding of the underlying diversity of various cultures. It is therefore understandable that promoting Environmental Citizenship in Europe should be context specific and tailored to the individual (Poškus 2017, 2018; Poškus and Žukauskienė 2017). Investigating values of different groups of individuals as well as values relevant to different cultures and regions (Katz-Gerro et al. 2017; Bardi and Goodwin 2011; Bardi et al. 2009; Inglehart and Baker 2000) would lend insight into how these regions could be best approached to promote Environmental Citizenship. While values are relatively stable if one's environment stays constant, they can be activated and shaped through changes in the environment (Bardi and Schwartz 2013; Bardi et al. 2009), especially through infrastructural solutions, such as paving bike lanes and providing readily available recycling bins. The most basic beliefs, on the other hand, are wholly dependent on the immediate environment and are readily changed when environmental influences reliably change. However, what is important to understand is the interaction between values and beliefs, since values, as individual difference variables, influence the way individuals form beliefs and, therefore, one cannot reach sustainable change if the values or beliefs are being addressed separately. In other words, sustainable change can be achieved by instilling an array of pro-environmental beliefs that would generalise the moral framework that makes up one's values. In addition, these values would need to be constantly reinforced through repeated examples of perceived desirable outcomes of acting upon one's beliefs.

A few steps need to be taken in order to holistically form the antecedents for Environmental Citizenship in Europe and beyond:

- A unified strategy of how the relevant policies would be put into practice needs to be developed in order to promote Environmental Citizenship through various societal driving factors (through media, education, communities and in the family).
- Educational and informational tools need to be developed and used in order to form factual and relevant beliefs about pro-environmental actions and to foster the development of values relating to Environmental Citizenship.

Perhaps the most efficient way to readily promote Environmental Citizenship here and now is through education. Citizenship education already is an integral part of the educational process, and various NGOs are already engaged in educating individuals to be more engaged in societal matters; thus, in many cases, formal and informal means for the education for Environmental Citizenship are already readily available. What might be lacking is a sense of direction and a unified methodology as well as a set of unified educational materials and shared goals. While many organisations engage in efforts that can be considered Education for Environmental Citizenship (ENEC 2018), these efforts, as they are now, are suboptimal because they do not work in unison with other areas of education. One of the key factors in effectively and robustly changing beliefs and forming values is consistency and multimodality of the stimuli used in this process (Bardi and Schwartz 2013; Bardi et al. 2009). In other words, the development of educational policies and curricula geared towards promoting Environmental Citizenship – actively transforming an individual’s values and mindset – are needed in order to provide a whole-school approach towards the development of Environmental Citizenship at various stages of their personal development. As part of such curricula development, there is a pressing need to promote active social engagement programmes and incorporate service learning modules into the curriculum, all of which promote environmental literacy and environmental responsible behaviour.

Acknowledgements This chapter is based on work from COST Action ENEC – European Network for Environmental Citizenship (CA16229) supported by COST (European Cooperation in Science and Technology).

References

- Abrahamse, W., & Steg, L. (2013). Social influence approaches to encourage resource conservation: A meta-analysis. *Global Environmental Change*, 23(6), 1773–1785. <https://doi.org/10.1016/j.gloenvcha.2013.07.029>.
- Ajzen, I. (1991). The theory of planned behavior. *Organizational Behavior and Human Decision Processes*, 50(2), 179–211. [https://doi.org/10.1016/0749-5978\(91\)90020-T](https://doi.org/10.1016/0749-5978(91)90020-T).
- Bailey, L., & Wilson, G. A. (2009). Theorising transitional pathways in response to climate change: Technocentrism, ecocentrism, and the carbon economy. *Environment and Planning A: Economy and Space*, 41(10), 2324–2341. <https://doi.org/10.1068/a40342>.

- Bardi, A., & Goodwin, R. (2011). The dual route to value change: Individual processes and cultural moderators. *Journal of Cross-Cultural Psychology*, 42(2), 271–287. <https://doi.org/10.1177/0022022110396916>.
- Bardi, A., & Schwartz, S. H. (2013). How does the value structure underlie value conflict. In J. Whitehead, H. Telfer, & J. Lambert (Eds.), *Values in youth sport and physical education* (pp. 137–151). London/New York: Routledge.
- Bardi, A., Lee, J. A., Hofmann-Towfigh, N., & Soutar, G. (2009). The structure of intraindividual value change. *Journal of Personality and Social Psychology*, 97(5), 913. <https://doi.org/10.1037/a0016617>.
- Berezkei, T., Birkas, B., & Kerekes, Z. (2010). Altruism towards strangers in need: Costly signaling in an industrial society. *Evolution and Human Behavior*, 31(2), 95–103. <https://doi.org/10.1016/j.evolhumbehav.2009.07.004>.
- Chatard, A., & Selimbegovic, L. (2007). The impact of higher education on egalitarian attitudes and values: Contextual and cultural determinants. *Social and Personality Psychology Compass*, 1, 541–556. <https://doi.org/10.1111/j.1751-9004.2007.00024.x>.
- Dawkins, R. (2006). *The selfish gene*. Oxford: Oxford University Press.
- De Groot, J. I., & Steg, L. (2007). Value orientations and environmental beliefs in five countries: validity of an instrument to measure egoistic, altruistic and biospheric value orientations. *Journal of Cross-Cultural Psychology*, 38(3), 318–332. <https://doi.org/10.1177/0022022107300278>.
- De Groot, J. I., & Steg, L. (2009). Mean or green: Which values can promote stable pro-environmental behavior? *Conservation Letters*, 2(2), 61–66. <https://doi.org/10.1111/j.1755-263X.2009.00048.x>.
- Dobson, A. (2007). Environmental citizenship: Towards sustainable development. *Sustainable Development*, 15(5), 276–285. <https://doi.org/10.1002/sd.344>.
- Dunlap, R. E., & Van Liere, K. D. (1978). A proposed measuring instrument and preliminary results: The new environmental paradigm. *Journal of Environmental Education*, 9, 10–19. <https://doi.org/10.1080/00958964.1978.10801875>.
- ENEC (European Network for Environmental Citizenship). (2018). Retrieved [2018-09-12]. <http://enec-cost.eu/our-approach/enec-environmental-citizenship/>
- EU. (2013). Decision No 1386/2013/EU of the European Parliament and of the Council of 20 November 2013 on a General Union Environment Action Programme to 2020 ‘Living well, within the limits of our planet’, OJ L 354, 20.12.2013, 171–200.
- European Environment Agency (EEA). (2015). *The European environment – State and outlook 2015: Synthesis report*. Copenhagen: European Environment Agency.
- Feather, N. T. (1979). Assimilation of values in migrant groups. In M. Rokeach (Ed.), *Understanding human values: Individual and societal* (pp. 97–128). New York: Free Press.
- Fischer, R. (2017). *Personality, values, culture: An evolutionary approach*. Cambridge: Cambridge University Press.
- Fishbein, M., & Ajzen, I. (2011). *Predicting and changing behavior: The reasoned action approach*. New York: Psychology Press.
- Goodwin, R., Polek, E., & Bardi, A. (2012). The temporal reciprocity of values and beliefs: A longitudinal study within a major life transition. *European Journal of Personality*, 26(3), 360–370. <https://doi.org/10.1002/per.844>.
- Huang, J. Y., & Bargh, J. A. (2014). The selfish goal: Autonomously operating motivational structures as the proximate cause of human judgment and behavior. *Behavioral and Brain Sciences*, 37(2), 121–135. <https://doi.org/10.1017/S0140525X13000290>.
- Inglehart, R., & Baker, W. E. (2000). Modernization, cultural change, and the persistence of traditional values. *American Sociological Review*, 65, 19–51. <https://doi.org/10.2307/2657288>.
- Jagers, S. C., & Matti, S. (2010). Ecological citizens: Identifying values and beliefs that support individual environmental responsibility among Swedes. *Sustainability*, 2(4), 1055–1079. <https://doi.org/10.3390/su2041055>.
- Kaltenborn, B. P., & Bjerke, T. (2002). Associations between environmental value orientations and landscape preferences. *Landscape and Urban Planning*, 59(1), 1–11. [https://doi.org/10.1016/S0169-2046\(01\)00243-2](https://doi.org/10.1016/S0169-2046(01)00243-2).

- Karp, D. G. (1996). Values and their effect on pro-environmental behavior. *Environment and Behavior*, 28(1), 111–133. <https://doi.org/10.1177/0013916596281006>.
- Katz-Gerro, T., Greenspan, I., Handy, F., & Lee, H. Y. (2017). The relationship between value types and environmental behaviour in four countries: Universalism, benevolence, conformity and biospheric values revisited. *Environmental Values*, 26(2), 223–249. <https://doi.org/10.3197/096327117X14847335385599>.
- Kortenkamp, K. V., & Moore, C. F. (2001). Ecocentrism and anthropocentrism: Moral reasoning about ecological commons dilemmas. *Journal of Environmental Psychology*, 21(3), 261–272. <https://doi.org/10.1006/jevp.2001.0205>.
- Krishnan, V. R. (2008). Impact of MBA education on students' values: Two longitudinal studies. *Journal of Business Ethics*, 83(2), 233–246. <https://doi.org/10.1007/s10551-007-9614-y>.
- Lindenberg, S., & Steg, L. (2013). Goal-framing theory and norm-guided environmental behavior. In H. van Trijp (Ed.), *Encouraging sustainable behavior* (pp. 37–54). New York: Psychology Press.
- Maio, G. R., Pakizeh, A., Cheung, W. Y., & Rees, K. J. (2009). Changing, priming, and acting on values: Effects via motivational relations in a circular model. *Journal of Personality and Social Psychology*, 97(4), 699. <https://doi.org/10.1037/a0016420>.
- Myyry, L., Juujärvi, S., & Pessa, K. (2013). Change in values and moral reasoning during higher education. *European Journal of Developmental Psychology*, 10(2), 269–284. <https://doi.org/10.1080/17405629.2012.757217>.
- Nordlund, A. M., & Garvill, J. (2002). Value structures behind pro-environmental behavior. *Environment and Behavior*, 34(6), 740–756. <https://doi.org/10.1177/001391602237244>.
- Nordlund, A. M., & Garvill, J. (2003). Effects of values, problem awareness, and personal norm on willingness to reduce personal car use. *Journal of Environmental Psychology*, 23(4), 339–347. [https://doi.org/10.1016/S0272-4944\(03\)00037-9](https://doi.org/10.1016/S0272-4944(03)00037-9).
- O'Riordan, T. (1981). Ecocentrism and technocentrism. In M. J. Smith (Ed.), *Thinking through the environment: A reader* (pp. 32–40). London: Open University Press/Routledge and Milton Keynes.
- Papert, S. (1988). A critique of technocentrism in thinking about the school of the future. In *Children in the information age* (pp. 3–18). <https://doi.org/10.1016/B978-0-08-036464-3.50006-5>
- Poškus, M. S. (2017). Normative influence of pro-environmental intentions in adolescents with different personality types. *Current Psychology*, 1–14. <https://doi.org/10.1007/s12144-017-9759-5>.
- Poškus, M. S. (2018). Personality and pro-environmental behaviour. *Journal of Epidemiology and Community Health*, eck-2018-210483. <https://doi.org/10.1136/jech-2018-210483>.
- Poškus, M. S., & Žukauskienė, R. (2017). Predicting adolescents' recycling behavior among different big five personality types. *Journal of Environmental Psychology*, 54, 57–64. <https://doi.org/10.1016/j.jenvp.2017.10.003>.
- Rokeach, M. (1968). *Beliefs, attitudes, and values*. San Francisco: Jossey-Bass.
- Schild, R. (2016). Environmental citizenship: What can political theory contribute to environmental education practice? *The Journal of Environmental Education*, 47(1), 19–34. <https://doi.org/10.1080/00958964.2015.1092417>.
- Schultz, P. W., & Zelezny, L. C. (1998). Values and pro-environmental behavior: A five-country survey. *Journal of Cross-Cultural Psychology*, 29(4), 540–558. <https://doi.org/10.1177/0022022198294003>.
- Schwartz, S. H. (1992). Universals in the structure and content of values: Theoretical advances and empirical tests in 20 countries. In M. P. Zanna (Ed.), *Advances in experimental social psychology* (Vol. 25, pp. 1–65). Orlando: Academic.
- Schwartz, S. H. (2012). An overview of the Schwartz theory of basic values. *Online Readings in Psychology and Culture*, 2(1), 1–20. <https://doi.org/10.9707/2307-0919.1116>.
- Steg, L., & De Groot, J. I. M. (2012). Environmental values. In S. Clayton (Ed.), *The Oxford handbook of environmental and conservation psychology* (pp. 81–92). New York: Oxford University Press.

- Steg, L., De Groot, J. I., Dreijerink, L., Abrahamse, W., & Siero, F. (2011). General antecedents of personal norms, policy acceptability, and intentions: The role of values, worldviews, and environmental concern. *Society and Natural Resources*, 24(4), 349–367. <https://doi.org/10.1080/08941920903214116>.
- Steg, L., Bolderdijk, J. W., Keizer, K., & Perlaviciute, G. (2014a). An integrated framework for encouraging pro-environmental behaviour: The role of values, situational factors and goals. *Journal of Environmental Psychology*, 38(1), 104–115. <https://doi.org/10.1016/j.jenvp.2014.01.002>.
- Steg, L., Perlaviciute, G., van der Werff, E., & Lurvink, J. (2014b). The significance of hedonic values for environmentally relevant attitudes, preferences, and actions. *Environment and Behavior*, 46(2), 163–192. <https://doi.org/10.1177/0013916512454730>.
- Stern, P. C. (2000). Toward a coherent theory of environmentally significant behaviour. *Journal of Social Issues*, 56(3), 407–424.
- Stern, P. C., Dietz, T., Abel, T., Guagnano, G. A., & Kalof, L. (1999). A value-belief-norm theory of support for social movements: The case of environmentalism. *Human Ecology Review*, 6(2), 81–97.
- Takahashi, B., Tandoc, E. C., Jr., Duan, R., & Van Witsen, A. (2017). Revisiting environmental citizenship: The role of information capital and media use. *Environment and Behavior*, 49(2), 111–135. <https://doi.org/10.1177/0013916515620892>.
- Thøgersen, J. (2012). *Pro-environmental spillover review of research on the different pathways through which performing one pro-environmental behaviour can influence the likelihood of performing another (Vol. 2)*. Working Paper, BehaviourWorks Australia. <http://www.behaviourworksaustralia.org>
- Thøgersen, J., & Ölander, F. (2002). Human values and the emergence of a sustainable consumption pattern: A panel study. *Journal of Economic Psychology*, 23(5), 605–630. [https://doi.org/10.1016/S0167-4870\(02\)00120-4](https://doi.org/10.1016/S0167-4870(02)00120-4).
- Thompson, S. C. G., & Barton, M. A. (1994). Ecocentric and anthropocentric attitudes toward the environment. *Journal of Environmental Psychology*, 14(2), 149–157. [https://doi.org/10.1016/S0272-4944\(05\)80168-9](https://doi.org/10.1016/S0272-4944(05)80168-9).
- Van der Werff, E., & Steg, L. (2016). The psychology of participation and interest in smart energy systems: Comparing the value-belief-norm theory and the value-identity-personal norm model. *Energy Research and Social Science*, 22(3), 107–114. <https://doi.org/10.1016/j.erss.2016.08.022>.
- Van der Werff, E., Steg, L., & Keizer, K. (2013). The value of environmental self-identity: The relationship between biospheric values, environmental self-identity and environmental preferences, intentions and behaviour. *Journal of Environmental Psychology*, 34(3), 55–63. <https://doi.org/10.1016/j.jenvp.2012.12.006>.
- Van der Werff, E., Steg, L., & Keizer, K. (2014). I am what I am by looking past the present: The influence of biospheric values and past behavior on environmental self-identity. *Environment and Behavior*, 46(5), 626–657. <https://doi.org/10.1177/00139165124752091>.

Open Access This chapter is licensed under the terms of the Creative Commons Attribution 4.0 International License (<http://creativecommons.org/licenses/by/4.0/>), which permits use, sharing, adaptation, distribution and reproduction in any medium or format, as long as you give appropriate credit to the original author(s) and the source, provide a link to the Creative Commons license and indicate if changes were made.

The images or other third party material in this chapter are included in the chapter's Creative Commons license, unless indicated otherwise in a credit line to the material. If material is not included in the chapter's Creative Commons license and your intended use is not permitted by statutory regulation or exceeds the permitted use, you will need to obtain permission directly from the copyright holder.

