Chapter 6
Psychological Aspects of Sustainability Communication

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Abstract A psychological view of sustainability communication opens up three perspectives. First, it deals with the social and societal construction of complex concepts like 'environment', 'nature' or 'sustainable development', which is realized through both direct and mediated communication; second it analyses (global) human-environment problems and their systemic interrelations hips, which elude immediate sensory perception and depend on visual and verbal communication; and, finally, it focuses on communication, which is an important tool to stimulate mankind to adopt sustainable behaviour patterns.

Keywords Environmental psychology • Sustainable behaviour • Perception of global environmental change • Gap between awareness and action

Environment, Nature and Sustainable Development as Social and Cultural Constructs

From the viewpoint of psychology – that is, environmental psychology – the problem is how to influence and modify non-sustainable behaviour patterns together with those factors on which they are based, such as values, attitudes, knowledge, motivation, habits, social norms, as well as the structural or contextual conditions of such behaviour. From this broad definition of a psychology focused on issues of sustainability, it becomes clear that such program of behavioural change includes and requires much more than communication alone. It also becomes clear that psychology alone cannot accomplish this. A long list of other human science disciplines

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dealing with 'human dimensions of global change' would have to be included, all of which could be summarized under the label of 'human ecology' (Kruse 2004). Typically each sustainability problem also includes aspects that involve natural science. As a result sustainable development requires multidisciplinary – or better yet – interdisciplinary cooperation between natural and human sciences, in which each of the participating disciplines must present, negotiate and integrate their theoretical concepts, their methodologies, and their problem-solving approaches in order to create a scientific basis for the societal process of sustainable development.

There are few analyses of environmental, or rather ecological communication, that miss the opportunity to quote Niklas Luhmann that there can only be a socially shared perception of environmental and of ecological risks if it is communicated (1989). The manner of communication becomes apparent – as, for example, environmental discourse – when certain issues and events are linked to concepts and corresponding valuations. These are created, stabilized or changed through face-to-face interactions or through the media, in scientific and in political discussions, that is, they are socially constructed. The environmental discourse that attracts attention through its large vocabulary of crises and risks, and at the same time of reassurance and alarm, is part of a continually changing social representation that is shared collectively or only by specific groups (Farr and Moscovici 1984; Graumann and Kruse 1990). The concept of 'sustainable development' has not quite reached the status of a social representation; at best, one could speak of a group-specific representation. When a biannual opinion poll on 'environmental awareness in Germany' in 2004 showed that about one third of all interviewees had at least heard of the term 'sustainable development', many saw this as a success (Kuckartz and Rheingans-Heintze 2004), but the very concept was discarded from later polls and replaced by concepts specifying crucial issues of sustainable development, such as intergenerational equity etc. (Umweltbundesamt 2009).

Environmental discourses and societal constructions of the environment often show great cultural variations (Douglas and Wildavsky 1982), not only between distant countries, such as those in the industrialized North and the emerging nations of the South, but also between neighbouring countries. A pertinent, and for some time politically controversial, example was the culturally divergent concept, valuation and use of *Waldsterben* (the 'death of the forests') in Germany and France. The adoption of the German term *le Waldsterben* in French served as a kind of 'distancing function' and reflected the low relevance of this environmental problem in France.

If everyday behaviour patterns are to be changed, it is important to consider group and subgroup-specific constructions and mentalities, which are discussed below under the headings of lifestyles and social milieus.

Perception and Evaluation of Global Environmental Changes

Social representations of the environment, of nature or of sustainability – as substantiated in societal discourse – play a crucial role in gaining attention to the structures and processes needing to be sustainably transformed, with the

perception and evaluation of underlying problems being of special relevance. An important catalyst for the conception and dissemination of the principle of sustainable development has been the growing recognition of and concern about the anthropogenic nature of environmental changes, which are based on non-sustainable or 'maladaptive' behaviours of humans towards life-supporting natural resources. The development of an adequate concept of sustainable development requires that humans be seen in their triple role: as causal agents, as victims and – most importantly – as change agents. The requirements for developing the learning processes and competencies of people (as individuals as well as members of groups and social collectives) are considerable, while the structures and processes of human-environment interactions show characteristics that compound the difficulties of learning such competencies (Pawlik 1991; Kruse 1995; Lantermann 2000):

- People lack the requisite sense organs for detecting many environmental conditions and changes, e.g. the ozone hole or radioactive fallout cannot be seen, heard, or smelt. Other changes are so minimal or gradual that they fall below the threshold of 'just noticeable differences'.
- Some human activities have immediate and direct effects on the environment, while others have delayed effects that may not immediately be seen as direct causes of environmental change. In addition to the *time lag* between interference and effect, there is a *spatial* factor that must be considered. For example, the CFC emissions of industrialized nations in the North first developed their harmful effects (depletion of the ozone layer) in the southern hemisphere. This temporal and spatial distance is often accompanied by a social distance between those causing and those affected by environmental deterioration or hazards. The inhabitants of wealthy countries, where pollution often originates, may not realize its effects on a highly vulnerable population in emerging countries, which has few resources to cope with the damages. With global environmental problems it is essential to consider both long-term and long-distance effects.
- Other cognitions come into play when individual effects are very small. This holds true not only for harmful activities but also for many positive behavioural contributions as well (e.g. reduced driving of a private car). Small damages to the environment or improvements are seen as a 'drop in the bucket' and the growing 'stream' accumulating over time is overlooked, as is the dissemination of new behaviour patterns to larger groups.
- In general high complexity, network structures, high dynamics and the non-transparency of human-environment interactions, together with long time horizons and multiply interrelated systems (Dörner 1989) present extreme difficulties for human cognitive abilities. In addition, one has to take into account the restricted or generally unpredictable nature of global developments, which require action under conditions of uncertainty and the development of entirely new decision-making processes and responsibilities (Lantermann 2000).

The invisibility and remoteness from experience of many environmental problems, as well as the inability to perceive correlations between cause and effect, has a number of psychological consequences:

- Where immediate experience is missing it is replaced by indirect experience. On one hand, individuals seek a better understanding through interpersonal communication, which offers social support, especially in cases where the 'reality' cannot be tested. On the other, the mass media assume significant relevance as they transform unnoticeable and abstract facts into images and computer simulations, as they use language to frame problems, thus making them comprehensible. The media thus have a specific role in the social construction of global environmental change. Furthermore, controversial expert debates in the media deserve special mention as they produce 'second-hand non-experience' for the public (Beck 1992).
- In order to make conspicuous and incomprehensible phenomena understandable, individuals will attempt to find a cause, even if a monocausal explanation does not do justice to the complex circumstances, such as the process of climate change (e.g. an accumulation of extreme weather events is seen as a consequence of climate change). Other cognitive strategies that are often regarded as leading to 'errors' in human information processing, but should rather be taken as 'rules of thumb', are the so-called judgmental heuristics. These simplify complex problem-solving processes, but are mostly used in an unreflected fashion (Kahneman et al. 1982). Such judgmental heuristics focus on, for example, the 'representativeness' of information, or cognitive 'availability' or 'framing' the specific presentation of facts. The importance of events that may indeed occur incidentally, like a very hot summer or a surprisingly long winter, may thus be overestimated and taken as an indicator for global warming (representativeness heuristics). The significance if novel or spectacular, picturesque and impressive incidents with great media coverage (dying seals or bird flu) will also be overestimated (availability heuristics).

Research on cognitive strategies and 'biased' findings are of special importance when applied to the appraisal, communication and acceptance of risks.

Moving toward sustainability involves transforming non-sustainable behaviour in many areas of everyday life, such as food consumption or recreational mobility. Ultimately it is all about complex processes of 'un-learning' non-sustainable behaviour patterns and adopting more sustainable ones or, more comprehensively, lifestyles. It also includes the acquisition of decision-making and action-taking competencies that take into account the three dimensions of sustainability, i.e. the environmental, economic and social (Kaufmann-Hayoz and Gutscher 2001). An important condition for this is knowledge about the conceptual foundations, methodologies and instruments of strategies for behavioural change.

The Gap Between Environmental Awareness and Action

In the public, but also in many political discussions, there is a widespread belief that an increase in knowledge and/or strengthening of attitudes will lead – almost automatically – to more sustainable behaviour. As a central instrument, communication

is primarily used in the sense of providing one-way information, such as leaflets, professional literature, lectures, radio and television broadcasts. On the other hand, however, there are constant complaints about the 'gap between knowledge and action'. Without being able to give a full account of these seemingly contradictory arguments (Diekmann and Preisendörfer 1992; de Haan and Kuckartz 1996; Kruse 2002), one can conclude that behaviour relevant to the environment and sustainability is influenced by a number of determinants that could be seen as either behavioural barriers hindering sustainable behaviour or as support for non-sustainable behaviour.

Since the 1970s a large body of research has been undertaken in the field of environmental awareness and action (e.g. Gardner and Stern 2002; Gifford 2007a; Schmuck and Schultz 2002) in order to understand the problems of sustainability learning. In the following the focus will be on 'environmentally relevant' or 'pro-environmental' learning. It should be noted however that there is still a need for more painstaking research into sustainable development, especially in view of its spatio-temporal, and global aspects, of its relationship to intergenerational justice and responsibilities as well as of the need for promoting sustainable behaviour patterns (for an overview, see APA 2010).

Multiple Determinants of Environmentally Relevant and Sustainable Behaviour

In response to an increasing interest in the everyday psychological problem of 'environmental awareness' or 'environmental concern', psychology has treated 'environmental awareness' as a scientific concept, in addition to examining other determinants of pro-environmental or conservation behaviour. Several explanatory models have been developed and empirically tested. The focus is on finding intervention strategies and instruments to modify non-sustainable behaviours and to promote more sustainable behaviour patterns. It is important to carefully evaluate these instruments as to their effectiveness and efficiency in various contexts of action.

Knowledge alone is not a guarantee for pro-environmental behaviour, especially abstract knowledge about environmental problems, which lacks an action orientation and is almost invariably based on survey questionnaires or public opinion polls. Knowledge, however, is one of the necessary factors that has to be taken into account and more recent research has made attempts to specify knowledge areas in a much more concrete, i.e. action-specific, manner, and furthermore to differentiate between types of knowledge, such as systemic knowledge, action knowledge and prognostic or effective knowledge, all of which will more closely correlate with concrete action. And, of course, in order to understand how knowledge is acquired, it is important to study aspects of communication, such as how factual information is actually presented.

There are further factors to be taken into account if pro-environmental and sustainable behaviour is to be promoted. These factors may be classified as individual, interpersonal/social and external/structural conditions.

- Aside from problems of knowledge, *individual factors* include problems of the perceptibility of environmental conditions and changes, as well as risk construction, understanding complex systems and the accompanying processes of information processing. Further individual factors include value orientations and attitudes as well as personality characteristics or habitual motives (e.g. egocentrism, altruism or social responsibility), but also temporary emotions like fear of failure or hope for success when pro-environmental actions are at stake.
- Social norms and values of membership and reference groups are examples of *interpersonal* and *social* factors. Values of a society as a whole (for example, orientation toward the principle of sustainability) are important, as are social, economic, political and cultural norms that are conveyed and filtered through the mass media. Social interaction and communication play an important role as they may facilitate or impede certain activities, and observation of others' behaviour (social models) usually has a strong influence on one's own behaviour. Furthermore, existing social networks (neighbourhoods, teams at school or at work) should be taken into consideration as they can facilitate the process of participation and learning. Another important aspect of a social situation is conflict among interest groups, in which supposed winners and losers of a specific action taken (e.g., reducing the speed limit in a residential area) may contribute to completely divergent perspectives and appraisals of a controversy.
- *External structures and contexts* can advance or hinder sustainable actions. There is often a lack of opportunities for action (e.g. lack of availability of public transportation or energy-saving devices) that are necessary for resource-saving behaviour. Another aspect of external structures are the various incentives for positive behaviour, with monetary rewards (eco-tickets, subsidies for solar panels) being most important, but also non-monetary rewards, such as social recognition or public praise having some influence.

For interventions to be successful the entire context of ecological and sociocultural conditions (climate, resource availability, economic, legal, technological and scientific educational opportunities) has to be taken into account.

Strategies and Instruments for Promoting Sustainable Behaviour

There are a great variety of explanatory models and strategies about how behaviour can be made more sustainable. Environmental psychology has developed quite a number of intervention strategies to enhance environmental awareness as well as increase the likelihood of undertaking environmentally relevant actions (e.g. Gardner and Stern 2002; Gifford 2007a). In the meantime the perspective has been broadened to address more complex patterns of awareness and actions, such as climate change and sustainable development (e.g. APA 2010; Gifford 2007b). The various intervention methods can be roughly classified into cognitive and behavioural strategies. The latter can be subdivided into antecedent measures preceding critical behaviour and consequence measures following critical behaviour.

Cognitive strategies try to influence cognition and knowledge of environmental conditions and changes by working with information and educational approaches (therefore, they are often summarized under the label of 'education'). In this context issues of information presentation, communication media, but also the characteristics of the communicator and the recipients are of special significance. However, more effective than pure information is concrete feedback about individual success and failure as well as learning from models – an example of an antecedent strategy. Other examples include prompts (e.g. signs or posters), self-defined or adopted goals and private or public commitments. Consequence measures, which as a rule are less effective than antecedent ones, mainly work with reward and punishment, but also with individual or collective feedback.

In general, it can be said that a combination of intervention instruments will only be successful in promoting sustainable behaviour if it takes into consideration specific target groups (e.g. car drivers, nature conservationists or tourists), fields of action (e.g. mobility or conservation of nature) and specific contexts (workplace, place of vacation or suburban dwellings). A fundamental condition, found in applied research projects, for advancing sustainable development in specific contexts is the evaluation of measures (e.g. Dwyer et al. 1993).

Information and Communication

Almost all interventions make use of information and communication. If the emphasis lies on cognitive or education-oriented intervention, then the focus is on various kinds of information materials. Social science research however has often confirmed that information alone is hardly ever effective in changing behaviour. Their effectiveness would improve if the most important principles of information and communication would be taken into account.

Classic communication models involve analysing a number of specific components:

- *Who* is the communicator? Competence and credibility are important. In addition to personal appearance prestige and affiliation with an organization are important.
- *What* is communicated? This addresses the issue of information content and design. Attitude and behaviour changes are more likely if there is information that is accurate, easily understandable, personalized and vividly presented. It should link to existing beliefs, interests and the knowledge of the recipients, or target groups, so that it is able to attract attention and can be understood. Since the presentation of facts can also be used to evoke emotions (joy, fear etc.), it is useful to consider the research findings on the effects of emotions on attitude change or behaviour modification.
- What is the *intention or function* of a communication situation? Kaufmann-Hayoz and Gutscher (2001) suggest a useful distinction between communication instruments *without* direct request or *with* direct request. The first type of communication presents facts, options, standards and objectives as well as model behaviour or

feedback with no intent to persuade or make calls for action, whereas communication with direct request is meant to convince individuals about facts, goals and norms, present reminders, send appeals and encourage self-commitment.

- What *media* is used? The choice is dependent both on the purpose of communication and on the target of communication. It must be clarified, for example, whether target persons need to be addressed individually or whether interpersonal exchange is to be stimulated for the purpose of fostering participatory processes. Also, it has to be decided what type of media and media design will be successful to attract attention, stimulate further information seeking or increase knowledge about the functioning of complex systems.
- What is the desired *success* of communication? This is a necessary, though a sensitive issue. Is it enough for a problem to be simply discussed, or is the intention rather to gain noticeable long-term behavioural change? What is the relation of the financial investment to the observable effects?

From the perspective of psychological intervention research and practice, well-designed information and communication processes are a necessary but not sufficient condition to promote the sustainable development of society. Even if it seems that newer strategies in environmental protection and the sustainability movement, such as participation, moderation and mediation or social marketing, put much emphasis on communication, without the introduction and design of additional factors, especially the provision of incentives for action and adequate opportunities, there will be no sustainable development that is also undertaken by the concrete actions of individuals.

Sustainable development implies a continual process of changing human-environment interactions, a process that must repeatedly focus on new objectives that result from the interdependencies between ecological, economic, social and cultural conditions. It is a global process that must be implemented internationally, nationally, regionally and locally, as well as at all levels of societal organization. Psychology, specifically environmental psychology, can contribute its concepts, methodologies and research findings about the various modes of human-environment interactions and can thus support learning processes for sustainable action. Communication of and about sustainability in society must prepare the ground for the multiple and multidisciplinary use of strategies and interventions to move people towards sustainable lifestyles and behaviour.

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