

Value Orientation, Awareness of Consequences, and Environmental Concern

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Abstract

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The tenets of the value-basis approach to environmental concern are (i) that environmental concern is motivated by beliefs about adverse egoistic (e.g., own health), social-altruistic (e.g., peoples' health), and biospheric consequences of environmental problems (e.g., the balance of the ecosystems), and (ii) that the relative importance of these consequences for environmental concern is determined by individuals' value orientations, generally proposed to be altruistic (self-transcendence) and egoistic (self-enhancement) value orientations. This thesis examines the basic tenets of the value-basis approach. In Study I the relationships between self-transcendence and self-enhancement value orientations and concern for and beliefs about egoistic, social-altruistic, and biospheric consequences of environmental problems were examined. A survey of Swedish residents ($n = 494$) showed that both concern for and beliefs about egoistic, social-altruistic, and biospheric consequences of environmental problems are related to the three value types power (concern for and beliefs about egoistic consequences), benevolence (concern for and beliefs about social-altruistic consequences), and universalism (concern for and beliefs about biospheric consequences) located on a value orientation dimension from self-enhancement to self-transcendence. It was also shown that beliefs about consequences partially mediate the effects of value orientation on environmental concern. Study II examined the relationships between self-enhancement and self-transcendent value orientations, beliefs about occurrence of specific environmental problems, and concern for consequences of these problems, and whether these factors and their relationships account for attitudes towards and stated willingness to pay (SWTP) for eco-labeled electricity. Another survey of Swedish residents ($n = 855$) showed that a self-transcendence value orientation, beliefs about environmental problems, and concern for consequences of the problems are positively related to attitude towards and SWTP for eco-labeled electricity. The results also showed that beliefs about occurrence of environmental problems partially mediate the positive influence of a self-transcendence value orientation on environmental concern. In turn, environmental concern was shown to partially mediate the influences of beliefs about environmental problems on attitude towards eco-labeled electricity. Study III examined influences of egoistically, altruistically, and biospherically framed messages on SWTP for eco-labeled electricity, and whether such influences are moderated by self-transcendence versus self-enhancement value orientation. An experiment conducted in the context of another survey of Swedish residents ($n = 476$) showed that SWTP for eco-labeled electricity is higher for biospherically framed messages than for egoistically and altruistically framed messages and increases with self-transcendence. It further showed that the effect of framing of messages on SWTP for eco-labeled electricity is not moderated by value orientation. In Study IV using the same survey data as in Study III, the relationship between self-transcendence versus self-enhancement value orientation and SWTP for eco-labeled electricity was reexamined and contrasted to the relationship between this dimension and stated willingness to reduce (SWTR) electricity consumption. The results showed that while there is a relationship between the value orientation dimension and SWTP for eco-labeled electricity there is no relationship between this dimension and SWTR electricity consumption. This was accounted for by assuming that it is more difficult to reduce electricity consumption than purchasing eco-labeled electricity. In conclusion, the four studies provide further empirical support for significant relationships between self-transcendence versus self-enhancement value orientations and pro-environmental attitudes. The main contribution is that these relationships are mediated by beliefs about environmental problems and environmental protection as well as moderated by situational influences.

Key words: Value orientation, awareness of consequences, environmental concern, eco-labeled electricity.

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Preface

The thesis consists of this summary and the following four studies referred to by their roman numerals:

- I.** Hansla, A., Gamble, A., Juliusson, E. A., & Gärling, T. (2008). The relationships between awareness of consequences, environmental concern, and value orientations. *Journal of Environmental Psychology*, 28, 1-9.
- II.** Hansla, A., Gamble, A., Juliusson, E. A., & Gärling, T. (2008). Psychological determinants of attitude towards and willingness to pay for green electricity. *Energy Policy*, 36, 768-774.
- III.** Hansla, A. (2011). Value orientation and framing as determinants of stated willingness to pay for eco-labeled electricity. *Energy Efficiency*, 4, 185-192.
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My last thoughts I dedicate to my family – my beloved wife and dear Cissi and Vicki for always being there for me (I guess you may now call me “*doktor Anden*” instead of “*doktoranden*”!), my dear Mom for always having had faith in me, my dear Dad for constantly inspiring me with his wise words, art, and gentleness, and my dear brother Eddie – Eddie, thanks for patiently waiting on our upcoming gigs and football games!

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Populärvetenskaplig sammanfattning på svenska

Ett centralt antagande i tidigare forskning är att miljöoro motiveras av medvetenhet om negativa konsekvenser av miljöproblem för värderade objekt. Dessa objekt kan vara egoistiska (t ex den egna hälsan), altruistiska (t ex framtida generationer), och biosfäriska (t ex djur och natur). Ett annat antagande är att den relativa betydelsen av dessa objekt för en individs miljöoro samvarierar med individens värdeorientering.

I Studie I undersöktes sambandet mellan egoistiska och altruistiska värdeorienteringar, tro på miljöproblemens egoistiska, altruistiska, och biosfäriska konsekvenser, samt oro för dessa konsekvenser. Resultaten av en enkätundersökning med 494 deltagare visar (i) att oro för och tro på egoistiska konsekvenser har samband med den egoistiska värdeorienteringen *makt*, (ii) att oro för och tro på altruistiska konsekvenser har samband med den altruistiska värdeorienteringen *välvillighet*, och (iii) att oro för och tro på biosfäriska konsekvenser har samband med den altruistiska värdeorienteringen *universalism*. Studie I visade också att värdeorienteringarnas inverkan på oro för egoistiska, altruistiska, och biosfäriska konsekvenser delvis kan förklaras av tron på att dessa konsekvenser inträffar.

I Studie II undersöktes hur egoistisk och altruistisk värdeorientering, tro på miljöproblemens existens, samt oro för egoistiska, altruistiska, och biosfäriska konsekvenser av miljöproblemen har samband med attityder till miljömärkt el och viljan att betala för densamma. Resultaten av en enkätundersökning med 855 deltagare visade att altruistisk värdeorientering, tro på miljöproblemens existens, samt oro för de tre typerna av konsekvenser av dessa problem har ett positivt samband med attityder till och viljan att betala för miljömärkt el. Resultaten visar också ett positivt samband mellan altruistisk värdeorientering och oro för samtliga tre typer av konsekvenser, som delvis kan förklaras av en starkare tro på miljöproblemens existens. På motsvarande sätt påvisades att det positiva sambandet mellan tro på miljöproblemens existens och attityder till miljömärkt el delvis kan förklaras av en ökad oro för miljöproblemens konsekvenser.

I Studie III undersöktes om betalningsviljan för miljömärkt el påverkas av hur konsekvenserna beskrivs. Skiljer sig betalningsviljan åt mellan beskrivningar som belyser egoistiska, altruistiska och biosfäriska konsekvenser? Påverkas individer med en altruistisk värdeorientering likadant av dessa beskrivningar som individer med en egoistisk värdeorientering? Resultaten av ett experiment som utfördes inom ramen för ytterligare en enkätundersökning med 476 deltagare visar att betalningsviljan för miljömärkt el är högre för beskrivningar som belyser biosfäriska konsekvenser av

miljömärkt elval och fossil bränsleanvändning jämfört med beskrivningar som belyser egoistiska och altruistiska konsekvenser av desamma. Resultaten visar dessutom att denna ”beskrivningseffekt” inte skiljer sig mellan individer med en altruistisk värdeorientering och individer med en egoistisk värdeorientering, och att, oberoende av beskrivning, ”altruister” är mer betalningsvilliga än ”egoister”.

I Studie IV undersöktes sambandet mellan en altruistisk (kontra egoistisk) värdeorientering och beredvillighet att minska sin elkonsumtion, vilket därefter jämfördes med sambandet mellan denna värdeorientering och betalningsvilja för miljömärkt el. Resultaten visade att medan betalningsviljan för miljömärkt el har ett positivt samband med en altruistisk (kontra egoistisk) värdeorientering, har beredvillighet att minska sin elkonsumtion inget samband med denna värdeorientering. Denna skillnad förklaras troligen av att det är svårare att minska sin elkonsumtion än att betala något mer för miljömärkt el.

En slutsats är att det finns ett klart samband mellan värdeorientering och miljövänlighet. Detta samband kan dock variera beroende på vilken typ av miljövänlighet som avses och även inte existera om miljövänligheten starkt påverkas av situationen. Då reagerar individer med olika värdeorienteringar likadant.

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Abbreviations

AC = awareness of/beliefs about consequences

EC = environmental concern

Self = oneself/egoistic consequences

Hum = humans/social-altruistic consequences

Bio = biosphere/biospheric consequences

SWTP = stated willingness to pay for eco-labeled electricity

SWTR = stated willingness to reduce electricity consumption

ATT = attitude towards eco-labeled electricity

VO = value orientation

NEP = The New Environmental Paradigm

Introduction

In the early period of environmental debate, environmental problems and environmental concern were almost exclusively viewed in an ecological light, with regard to harmful consequences for the biosphere and the ecosystem. Environmental interest groups were the primary promoters of this view. These groups not only recognized and expressed concern that human lifestyles had adverse consequences for the biosphere, but also ascribed an intrinsic value to the biosphere. The first widespread measure of such biospheric concerns was “The New Environmental Paradigm” (NEP), developed by Dunlap and Van Liere (1978). The NEP scale is still widely used (see Dunlap, 2008, for a discussion on past and modern use of it).

Taking a biospheric approach to environmental problems and environmental concern appears inescapable. Conceptually, environmental problems are problems of ecosystems and they can hardly be discussed without reference to ecological entities (e.g., deforestation, extinction of animal species, overfishing). However, recent accumulation of knowledge on climate change (IPCC, 2001) has nuanced understanding of the causes and consequences of environmental problems. Consequences of global warming are not restricted to ecosystems and non-human inhabitants, but extend directly or indirectly to societal environments involving the lives and health of humans. Thus, environmental problems have become as much political, economical, social, and individual as ecological problems.

These insights have had important implications for environmental psychology. It is now common practice within the field to take a multi-dimensional approach to environmental concern and pro-environmental behaviors. The essence of this approach is the assumption that environmental concern and pro-environmental behaviors have multiple motives (i.e., egoistic, social-altruistic, and biospheric) and can be expressed by individuals with different values, beliefs, and norms.

The general goal of this thesis is to examine such multiple motives of general and specific environmental concern. More specifically, the aims are (1) to examine relationships between value orientation, beliefs about consequences of environmental problems, and environmental concern regarding these consequences, (2) to examine the extent to which these factors and their relationships account for attitude towards environmental behavior in the specific domain of household electricity use (i.e., purchasing eco-labeled electricity and reducing electricity consumption), and (3) to examine whether these factors and their relationships interact with situational influences in forming attitudes towards environmental behavior in this domain.

This summary is organized as follows. In the first section, previous research on value orientation and environmental concern is reviewed. A main focus here is on issues related to conceptualizing, defining, and measuring environmental concern in relation to value orientation. In the second section, I give an overview and detailed summaries of the four empirical studies that were conducted in the context of this thesis. The third section proceeds with discussions and interpretations of the main findings. In a final section, conclusions are drawn and some future research directions are discussed.

Review of Previous Research

Value Orientation

General definitions. Values are cognitive representations of abstract goals (e.g., a world at peace) or abstract means of behaving (e.g., being helpful) that vary in desirability or importance. Similar to needs, desires, and goals, they function as motivational constructs that guide a person's behavior, but unlike specific goals and desires, they transcend situations (Rokeach, 1973; Schwartz, 1992; see Rohan, 2000, for an analysis of the value construct). Values can be clustered according to the type of motive they serve. Such a cluster is referred to as a value type. For instance, being helpful and loyal serves the motive of the value type benevolence. Compatible value types (e.g., benevolence and universalism) can further be clustered into a value orientation (e.g., self-transcendence).

Schwartz (1992) examined the interrelationships among 56 values across cultures using multi-dimensional scaling. The results showed that these values could be reduced to 10 value types located along two orthogonal value-orientation dimensions. As shown in Figure 1, the first dimension ranges from a self-enhancement to a self-transcendence value orientation, whereas the second dimension ranges from conservatism to openness-to-change. Of particular importance for the present thesis are the self-transcendence and self-enhancement value orientations, since previous studies have linked these value orientations to pro-environmental attitudes and behaviors (e.g., Nordlund & Garvill, 2002; Stern, et al., 1998).

Self-transcendence. Self-transcendence is a social-altruistic value orientation, closely related to what in another line of research is conceptualized as a pro-social value orientation (cf. Van Lange et al., 1997). The former value orientation comprises two value types, universalism and benevolence. The motivational goal of universalism is improving the welfare of *all* people.

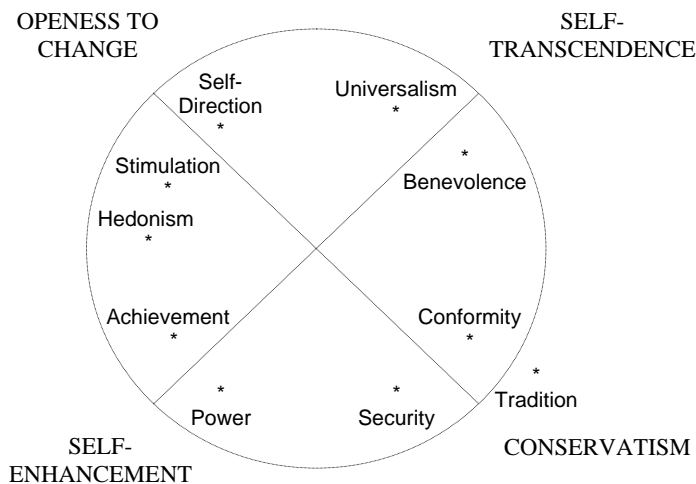


Figure 1. Circumplex model of value types. (Adapted from Schwartz, 1992.)

Examples of universalism values are shown in Table 1. Universalism is the broader form of altruism. In contrast, the motivational goal of benevolence is on the welfare of close others. Suggesting important differences between the value types, Gärling (1999) found that pro-social and pro-self individuals are equally oriented towards benevolence but that prosocials are more oriented towards universalism. Also, while universalism has been found to be positively related to pro-environmental attitudes and behaviors, studies examining relationships with benevolence have produced inconsistent results of either positive or no relationships (Grunert & Juhl, 1995; Schultz & Zelezny, 1999; Thøgersen & Ölander, 2002). Despite the conceptual and empirical differences between universalism and benevolence, in previous studies on pro-environmental attitudes and behavior these value types have normally been aggregated to an overall measure of self-transcendence (e.g., Nordlund & Garvill, 2002, 2003; Schultz, 2001).

In addition to universalism and benevolence, a biospheric value type is assumed to exist. Its motivational goal is the welfare of the biosphere (Attfield, 1981; Naess, 2003). Yet, empirical support is largely lacking for a distinct biospheric value type. In factor analytic studies, universalistic and biospheric value items tend to load on the same factor (Schwartz, 1992; Stern et al., 1995; Stern et al., 1999). By including additional value items that more clearly target biospheric values (e.g., “preventing pollution”), recent studies have been able

Table 1. Clusters of values within value types.

Self-transcendence	Self-enhancement
<p><i>Universalism</i></p> <ul style="list-style-type: none"> Protecting the environment Unity with nature A world of beauty Broad minded Social justice Wisdom Equality A world at peace Inner harmony 	<p><i>Power</i></p> <ul style="list-style-type: none"> Social power Authority Wealth Preserving one's public image Social recognition
<p><i>Benevolence</i></p> <ul style="list-style-type: none"> Helpful Honest Forgiving Loyal Responsible A spiritual life True friendship Mature love Meaning in life 	<p><i>Achievement</i></p> <ul style="list-style-type: none"> Successful Capable Ambitious Influential Intelligent

Note. The classification of values is adopted from Schwartz (1992).

to separate a biospheric from a social altruistic value type (Steg et al., 2005; De Groot & Steg, 2007). However, the biospheric items added tend to be more specific and tuned towards attitudinal and behavioural components than the original universalism items. Thus, a possibility is that the proposed distinction partly reflects differences between conceptual levels of measurement.

While it has been difficult to distinguish between social altruistic and biospheric values, an attitude towards social altruistic targets has been distinguished from an attitude towards biospheric targets (Thompson & Barton, 1994, Stern et al., 1995). Attitudes refers to an *evaluation* of a designated object (i.e., how good or bad it is) that may be basically anything, an object, person, event, or activity (Eagly & Chaiken, 1998). In contrast and as defined above, values are confined to abstract principles in a person's life that are evaluated in terms of importance. In previous studies (e.g., Schultz & Zelezny, 1999) a connection has been made between attitudes towards social altruistic

and biospheric targets (e.g., future generations and balance of ecosystems) and Schwartz' (1992) value orientations. Several studies show positive relationships between self-transcendence on the one hand and distinct social altruistic and biospheric attitudes on the other hand (Nordlund & Garvill, 2002, 2003; Schultz, 2001; Schultz, et al., 2006; Stern et al., 1995). Taken together these findings suggest that both biospheric and social altruistic attitudes are influenced by a social-altruistic value orientation, which would make redundant the assumption of a separate biospheric value type. A possibility is thus that benevolence accounts for the relationship with social-altruistic attitudes and universalism accounts for the relationship with biospheric attitudes. Benevolence can be assumed to be related primarily to a restricted form of social-altruistic attitude (e.g., concern for children's future). But benevolence may also, depending on the context, be related to wider forms of social-altruistic attitudes (e.g., concern for other and all people). For instance, if other people or all people are contrasted with animal species, the former may be construed as an in-group.

Why would then universalism make individuals inclined to express an attitude towards biospheric targets (e.g., animals, plants, and ecosystems)? Schultz (2001) has suggested that self-transcendence may reflect a primitive belief about inclusion of nature in self. Including nature in one's self-construal would lead to concern for biospheric targets. Inclusion of nature in self is a concept very similar to "The New Environmental Paradigm" (NEP, Dunlap & Van Liere, 1978), with the main difference being that the NEP targets a worldview on the interconnectedness between humanity and nature. Positive relationships between inclusion of nature in self, attitudes towards biospheric targets, and NEP are also reported in Schultz (2001).

Yet, a potential methodological problem in previous studies concerns the inclusion of three biospheric value items ("protecting the environment," "unity with nature," and "world of beauty") in the measure of self-transcendence (see Schultz, 2001; Schultz & Zelezny, 1999; Schwartz, 1992) and four ("protecting the environment," "unity with nature," "respecting the earth," and "preventing pollution") in a modified self-transcendence measure (De Groot & Steg, 2007; Steg et al., 2005; Stern et al., 1999; Stern et al., 1998). Including biospheric value items in both the attitude and value measures may lead to criterion contamination and produce spurious correlations between self-transcendence and attitudes towards biospheric targets. Therefore, it is not conclusively settled whether the reported relationship between self-transcendence and biospheric attitudes reflect item similarity, a broad social-altruistic (universalistic) value basis of biospheric attitudes, or a biospheric value basis

of biospheric attitudes. Insight into these issues should be gained by removing the biospheric items from the universalism measure and re-examine the relationship.

Self-enhancement. Self-enhancement is an egoistic value orientation, closely related to what in another line of research is conceptualized as a pro-self value orientation (cf. Van Lange et al., 1997). The former value orientation includes two value types, power and achievement. Examples of values within these value types are shown in Table 1. The motivational goal of power is focused on gaining control or dominance over people and resources, whereas the motivational goal of achievement is focused on gaining "personal success through demonstrating competence according to social standards" (Schwartz, 1992, p. 8). These value types can be assumed to influence attitudes towards the targets discussed above differently. The power value type, in particular, should not be consistent with a biospheric attitude, as its motivational focus is partly on control over resources that might be natural, material, or social. In addition, power is the opposite of universalism in Schwartz' (1992) value structure, and therefore represents the highest degree of self-enhancement. Empirically, power has been shown to correlate negatively with the NEP scale (Schultz & Zelezny, 1999; Steg et al., 2005; Stern et al., 1999) and positively with Thompson and Barton's (1994) anthropocentric/egocentric environmental attitude scale, while achievement has not been found to correlate with these scales (Schultz & Zelezny, 1999). Yet, the unique effects of power and achievement have only been scarcely studied in relation to other types of environmental-attitude scales that more clearly distinguish attitude towards egoistic from attitude towards social-altruistic and biospheric targets.

The relationship between self-transcendence and self-enhancement. In previous research the relationship between self-transcendence (ST) and self-enhancement (SE) has not been thoroughly analyzed. If SE is a dimension that varies from no to maximal self-concern, how is concern for others related to this dimension? Three possibilities are shown in the fourfold tables in Figure 2: (i) a negative linear relationship; (ii) a positive linear relationship; (iii) a negative non-linear relationship. In the following I discuss each of these possibilities.

According to Schwartz (1992), ST and SE values are in conflict and located on opposite poles in a circumplex value structure. Measures of SE tend also to be negatively related to the type of environmental concerns that ST is positively related to (Schultz, 2001). This would suggest a negative linear

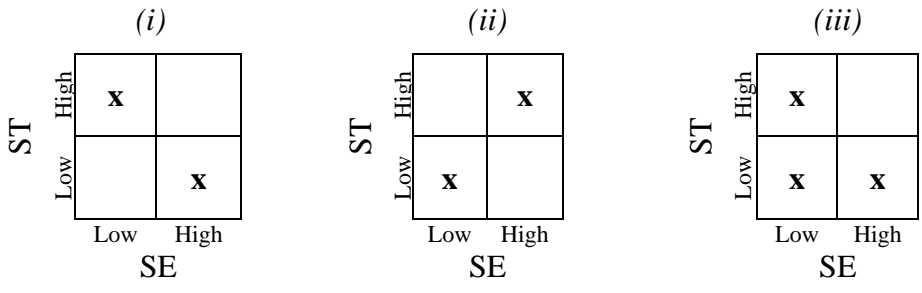


Figure 2. Possible relationships between self-enhancement (SE) and self-transcendence (ST): (i) a negative linear relationship; (ii) a positive linear relationship, and; (iii) a negative non-linear relationship.

relationship between SE and ST, as that shown in (i), and thus imply that people are jointly concerned about self and others, yet differ with regard to their relative importance. Research on social value orientation (e.g., Balliet et al., 2009; Liebrand, 1984; Van Lange et al., 1997) seems to corroborate this negative linear relationship by showing that some individuals tend to maximize joint outcomes (pro-socials), whereas others instead tend to maximize individual outcomes (pro-selfs). If assumed that there is a negative relationship between concern for others and concern for self, a unidimensional measure of a SE versus ST value orientation can be constructed such that for each individual the relative importance of SE and ST values is assessed.

Still, value types that are located as opposite poles in a circumplex structure need not necessarily be negatively correlated. Among a set of positively correlated values, those that have the lowest positive correlation may still be conflicting poles in a circumplex structure. Notably, positive correlations have been demonstrated between value pairs proposed to be in conflict, such as benevolence and achievement (Lee et al., 2008). The possibility (ii) that ST increases with SE should therefore be considered. A theoretical account would be that helping others in most situations is beneficial to oneself, in the short as well in the long-term. This reduces personal distress (Cialdini et al., 1987), makes people feel good about themselves (“warm-glow” altruism, see Andreoni, 1990), improves their social status, and increases the prospect of receiving rewards in the future (e.g., reciprocal altruism, see Trivers, 1971). People may thus experience concern for self and concern for others to be both important.

Methodological explanations for a positive relationship between SE and ST also need to be considered (Lee et al., 2008; Schwartz, 1994). As all values (including SE and ST) are inherently desirable, people may show a tendency to

rate both kinds of values to be important. Thus, if some people are more inclined than others to do this, a spurious positive correlation between SE and ST would result. The problem is partly overcome by mean-centering value ratings before conducting any analysis of their relationships, which then tends to produce negative relationships between conflicting values.

In addition to the relationships discussed above, a third possibility is that concern for self and concern for others are mutually exclusive. This is illustrated as a negative non-linear relationship between ST and SE in Figure 2. According to this possibility, individuals are either selfish or altruistic (in various degrees), and changing the former would not change the latter. This implies a “pure” altruism, that is that essentially the ultimate goal of an altruistic act is the wellbeing of one or more other individuals. Although some empirical evidence has been provided in support of this proposition (see Batson & Shaw, 1991), these have been heavily criticized for not ruling out alternative “egoistic” explanations. Theoretically, it may be argued that some instances of parental caretaking and protection of offspring may be purely altruistic, as these behaviors are related to kinship (cf. inclusive fitness theory, Hamilton, 1964).

Environmental Concern

General definitions. There has been some confusion in the environmental psychology research about the precise meaning of environmental concern (Bamberg, 2003; Fransson & Gärling, 1999). The term has been used with reference to specific beliefs about or awareness of consequences of environmental problems (Stern et al., 1995), general environmental beliefs and worldviews (Dunlap & Van Liere, 1978), environmental attitudes or evaluations (Fransson & Gärling, 1999), affect or worry associated with environmental problems (Schultz et al., 2004), or emotional connectedness to nature (Mayer & Frantz, 2004). Conceptualizations and measures of environmental concern (e.g., NEP, Dunlap & Van Liere, 1978) also seem to largely deviate from how attitudes are conventionally conceptualized and measured in social psychology (Eagly & Chaiken, 1998). According to the theory of planned behavior (TPB, Ajzen, 1991), an attitude is comprised of beliefs about and evaluations of consequences. For this reason, a distinction should be made between beliefs about consequences of environmental problems (awareness-of-consequences beliefs, AC-beliefs) and concern for consequences of environmental problems (environmental-concern evaluations, EC-evaluations). In this thesis, AC and EC refer to the belief and evaluative components of an environmental attitude, respectively.

Awareness-of-consequences beliefs. AC-beliefs are central motivational constructs in a number of theories on social behavior, for instance the theory of planned behaviour (Ajzen, 1991), the norm-activation model (Schwartz & Howard, 1981), and the value-belief-norm (VBN) theory (e.g., Stern, 2000; Stern, et al., 1999). In the VBN theory, AC-beliefs refer to beliefs about adverse consequences of environmental problems. This theory posits that beliefs about egoistic (ACself) social-altruistic (AChum) and biospheric consequences (ACbio) of environmental problems are causally related to value orientation. One rationale for this is that a value orientation engages a top-down process that biases individuals to select and believe in information that is congruent with the value orientation and to deny value-incongruent information. It can thus be assumed that a self-enhancement value orientation is positively related to ACself and that a self-transcendence value orientation is positively related to AChum and ACbio. However, the few studies that have tested these assumptions have found positive relationships between self-transcendence and each of the AC-beliefs while self-enhancement has been found to be unrelated to the AC-beliefs (Stern & Dietz, 1994; Stern et al., 1995). In Study I the question is raised whether these inconsistent findings reflect a theoretical gap or validity and reliability problems with the measurement of AC-beliefs.

In fact, several studies (Gärling et al., 2003; Joireman et al., 2001; Snelgar, 2006; Stern et al., 1993) have reported low to moderate reliabilities for the AC scales. Stern et al. (1993) argued that the reason for the low reliabilities was that too few items (3) were used to measure each construct. However, Gärling et al. (2003) had to remove one item from each AC scale in order to improve reliability, and Joireman et al. (2001) reported low to moderate reliabilities even after increasing the number of items to 4 or 5 per scale.

Low validity may also be an issue. First, the AC-self scale has not been found to relate positively to self-enhancement and to more recent measures of egoistic environmental concern (Snelgar, 2006). Yet, egoistic environmental concern is found to be positively related to self-enhancement (Schultz, 2001; Schultz et al., 2006). Second, in Stern et al. (1995) ACself was positively related to a modified self-transcendence measure whereas in Schultz (2001) egoistic environmental concern was negatively related to a self-transcendence value orientation.

A possible reason for the inconsistent findings is the reverse coding of two AC-self items that was used in previous studies (see Stern et al., 1995; Gärling et al. 2003). Disagreements with the items "Laws that protect the environment limit my choices and personal freedom" and "Protecting the

environment will threaten jobs for people like me” were coded as reflecting high awareness of egoistic consequences. But disagreeing with these statements implies that there would be no adverse egoistic consequences. The AC-self scale appears thus to not measure what it intends, that is *adverse* egoistic consequences. Disagreements with these statements would express low awareness of adverse consequences for oneself. However, the referent is adverse consequences of abatement of environmental problems.

Environmental-concern evaluations. Although its definitions vary across studies, environmental concern (EC) refers typically to an attitude towards environmental issues (Fransson & Gärling, 1999), that is an evaluation (Eagly & Chaiken, 1998).

In several studies (Schultz 2001; Schultz et al., 2004; Snelgar, 2006) environmental concern is measured with the question: “People around the world are generally concerned about environmental problems because of the consequences that result from harming nature... I am concerned about environmental problems because of the consequences for...” (Schultz, 2001, p. 338). Twelve attitude objects (e.g., my health, all people, plants) are then presented, and participants are asked to make concern ratings for each of these objects. The results of this method have shown distinctiveness of concern for the biosphere (ECbio), concern for others (EChum), and concern for oneself (ECself). The scales also show high internal consistency and have been found to be congruently related to value orientation; ECself to self-enhancement (positively) and self-transcendence to EChum and ECbio (positively).

It should be emphasized that the focus of Schultz’ (2001) EC measure is individuals’ concern for specific attitude objects, not individuals’ beliefs that these attitude objects are affected by environmental problems. Also, the measure seems to build on the tenet that individuals believe equally strongly in environmental problems in the first place, and that they only have to “allocate” their concerns across the present consequences. Yet, this should not be presupposed without being tested.

In principle, there are at least three different ways of relating beliefs about consequences to environmental concern for consequences. First, an independent relationship might be proposed, which would be in line with expectancy-value models. For instance, Fishbein and Ajzen (1975) (see also Ajzen & Fishbein, 1980) in their theory of reasoned action and its successor the theory of planned behavior (Ajzen, 1991) make a distinction between beliefs about and evaluations of outcomes. These are assumed to combine multiplicatively to an attitude. Assuming an independent relationship would

allow for incongruence between beliefs and concerns, such that individuals at the same time can believe in and not be concerned about the consequences of environmental problems for an attitude object. However, empirically, expectancies (beliefs) and evaluations (concerns) are usually found to be correlated (Behling & Starke, 1973). Also, since value orientation has been shown to relate both to environmental concern and AC-beliefs, assuming independency is scarcely tenable.

A second approach is to propose that beliefs about and concern for environmental consequences are perfectly and positively dependent. Individuals would thus express concern for an attitude object whenever they believe this object is adversely affected by environmental problems and vice versa. This approach seems to resemble current approaches to environmental concern that have not made a theoretical distinction between AC-beliefs and environmental concerns, but simply treated them as different measures of the same environmental-concern construct (Snelgar, 2006).

A final approach is intermediate by viewing AC-beliefs and environmental concerns as distinct yet positively related constructs. Building on previous findings of significant relationships between value orientation on the one hand and AC-beliefs and environmental concerns on the other hand, it should be questioned whether AC-beliefs mediate the relationships between value orientation and environmental concerns. The rationale for proposing AC-beliefs as a mediator is that environmental concern for specific consequences would presuppose awareness of or beliefs about occurrence of these consequences. The alternative assumption that individuals' first concern is for specific consequences and that they then become aware of the consequences does not make sense theoretically¹. It is thus proposed that ECself, EChum, and ECbio are causally related to ACself, AChum, and ACbio, respectively. In turn, ACself, AChum, and ACbio are proposed to be causally related to the three value types power, benevolence, and universalism, respectively.

Situational influences. A mediation model as that proposed above may only partially explain how and why value orientation is related to environmental attitudes. The possibility should be considered that the relationship between value-orientation and pro-environmental attitudes is moderated by situational factors. Two such factors are information and behavioral difficulty. Increasing information about environmental issues is

¹Yet, if viewed as a process, environmental concern may reinforce AC-beliefs once they have begun to form.

generally assumed to have a positive influence on environmental concern and pro-environmental behavior intention (Steg & Vlek, 2009; Thøgersen, 2005), and thus may strengthen the influence of value orientation. In contrast, increased behavioral difficulty is commonly assumed to have a negative influence on pro-environmental behavior intention (e.g., Diekmann & Preisendörfer, 2003; Steg & Vlek, 2009), and thus may attenuate the influence of value orientation.

Since people are likely to express environmental concern when they are aware that environmental problems have adverse consequences for valued objects, information that makes salient such consequences may accordingly influence environmental concern. However, as individuals have different value orientations and thus tend to value different objects, framing or tailoring of messages may be required to make effective any informational influence. One way of framing messages would be to vary the salience of egoistic, altruistic, and biospheric consequences of environmental problems. Such a framing approach has been discussed in some detail in previous research (see, e.g., Schultz & Zelezny, 2003). Still, few attempts have been made to assess its potential influence. It would therefore be worthwhile to examine (i) whether egoistically, altruistically, and bio-spherically framed messages differently influence a pro-environmental attitude, and (ii) whether value orientation interacts with framing of messages in forming pro-environmental attitudes. It is proposed that for individuals with a self-enhancement value orientation, an egoistic message would be more appealing than altruistic or biospheric messages, thus influencing these individuals to express a stronger pro-environmental attitude in the context of the former than the latter messages. In contrast, for individuals with a self-transcendence value orientation, altruistic and biospheric messages would be more appealing than an egoistic message. Yet, as these individuals may already be pro-environmentally oriented, a ceiling effect could possibly hamper any positive influence of framing on pro-environmental attitude.

Previous research has shown that the relationship between attitudes and behaviors is moderated by how difficult or costly the behaviors are to perform (e.g., Bekkers, 2005; Guagnano et al., 1995). It has still not been conclusively settled in which direction this moderation goes. Some have proposed that attitudes will exert a stronger influence on behavior when the behavior is difficult compared to when it is easy to perform (Schultz & Oskamp, 1996). Easy behaviors are often performed on a habitual basis and may be as much motivated by weak as by strong positive attitudes. As a consequence, these behaviors would not differentiate between people with negative, slightly

positive, and highly positive attitudes. Yet, for difficult behaviors, such differentiation is likely to occur, as only a strong positive attitude would motivate people to take action and overcome the behavioral difficulty. A critique of this proposition is yet that it may lack theoretical substance. According to the theory of planned behavior, behavioral difficulty as reflected in perceived behavioral control has a negative and independent influence on behavior intention (Ajzen, 1991). This implies that motivational influences of attitude on behavior intention does not change with changes in behavioral difficulty, yet that a difficult behavior is less likely to be performed than an easy behavior.

An opposite prediction that has been proposed is that attitudes have a stronger influence on easy compared to difficult behaviors (the “low-cost hypothesis”, Diekmann & Preisendörfer, 2003). It is thus argued that difficult or costly behaviors require resources that people might not have. Hence, although holding favorable attitude towards X, people may simply be unable to perform X. However, when a behavior is easy to perform, a positive versus negative attitude may be the difference between acting and not acting. Synthesizing the two contradictory hypotheses, Guagnano et al. (1995) proposed that attitudes exert a stronger influence on moderately difficult behaviors, yet have a weaker influence on very easy and very difficult behaviors.

Much of the controversy surrounding the moderating role of behavioral difficulty may be due to a problem with objectively defining behavioral difficulty in real-world situations. Whether it is shown that the attitude-behavior relationship linearly decreases or increases with behavioral difficulty or shows an inverted U-relationship across behavioral difficulty, may depend on the range of behavioral difficulty that the researcher chooses to study.

Summary of Empirical Studies

Overview of Studies

Based on survey data from three random samples of Swedish residents, four studies were conducted with the general aim of examining influences of value types or value orientations on environmentally significant attitudes. In Study I relationships were examined between value types (power, achievement, benevolence, and universalism), awareness-of-consequences beliefs (egoistic, altruistic, and biospheric), and environmental-concern evaluations (egoistic, altruistic, and biospheric). In linking the constructs, a mediation model was proposed positing that the relationships between value types and EC-evaluations are mediated by AC-beliefs. Study II investigated the applicability

of the mediation model to a specific attitude towards and stated willingness to pay (SWTP) for eco-labeled electricity. Since in Study I the measures of AC-beliefs were found to be not reliable, new measures of AC-beliefs (and of EC-evaluations) were developed and used in Study II. In Study III an experiment was conducted to investigate the influence of egoistically, altruistically, or biospherically framed messages on environmental attitudes. The question raised was whether value orientation and framing of messages interact in forming an environmental attitude, measured as SWTP for eco-labeled electricity. Study IV examined situational factors that are hypothesized to attenuate influences of value orientation on environmental attitude. Effects of value orientation on SWTP for eco-labeled electricity (Studies II and III) were compared to effects of value orientation on an equivalently measured stated willingness to reduce (SWTR) electricity consumption. It was argued that the higher difficulty associated with reducing electricity consumption weakens the effects of value orientation on SWTR.

Study I

Study I tested whether the relationships between value types and environmental-concern evaluations of specific consequences of environmental problems (EC-evaluations) are mediated by beliefs about the specific consequences (AC-beliefs). The theoretical rationale for mediation is that a value type activates a top-down process that biases individuals to believe in specific consequences of environmental problems that are congruent with the prioritized value type, which in turn would elicit concern for these consequences as well. In line with this, the hypotheses were that (1) AC beliefs and EC evaluations are distinct constructs but related to each other if they both target the biosphere, others, or self; (2) that each type of AC belief and EC evaluation is related to a distinct value type (ACbio and ECbio to universalism, AChum and EChum to benevolence, and ACself and ECself to power), and; (3) that the effects of value types on EC evaluations are mediated by AC-beliefs.

Another question that was raised was whether the relationship found in previous studies between universalism and ECbio is replicable when items targeting biospheric entities are not included in the measure of universalism. Since in previous studies biospheric items have been included in universalism, it is not clear whether the reported relationships between universalism and ECbio reflect item similarity, a biospheric value basis of ECbio, or a social-altruistic (universalistic) value basis of ECbio. By removing the biospheric items, a more conservative test is offered of the assumption that a broad social-altruistic value type (universalism) underlies ECbio.

In line with the hypotheses, the results of a survey of Swedish residents ($n = 494$) showed that ECself, EChum, and ECbio are related to corresponding AC beliefs. It was also shown that both the AC beliefs and EC evaluations are related to the three value types power (to ACself and ECself), benevolence (to AChum and EChum), and universalism (to ACbio and ECbio). In addition, the results provided partial support for the mediation hypothesis; ACself and AChum were shown to partially mediate the effects of power and benevolence on ECself and EChum, respectively. However, no significant mediation could be found for ACbio in the relationship between universalism and ECbio.

It should be noted that the positive relationships found between power, ACself, and ECself seem to reflect an “anti-environmental orientation”. The reason for this is that the ACself items primarily target adverse consequences of environmental protection. Theoretically, they should target adverse consequences of environmental problems. Hence, the positive relationship between power and ACself implies that individuals prioritizing power values believe more strongly in the egoistic consequences of environmental protection.

Study II

The first aim of Study II was to test whether the mediation model that was proposed and partly supported in Study I accounts for attitudes towards and SWTP for eco-labeled electricity. Since in Study I the AC-scales were found to have low reliabilities (a replication of previous findings as described above) and to overlap with the EC scales, in Study II new AC and EC scales were developed based on pilot testing. The new scales were calibrated to more clearly discriminate between the belief and evaluative components of environmental concern.

The theoretical rationale for the mediation model proposed in Study II was that a self-transcendence value orientation biases individuals to believe more strongly in environmental problems and their adverse social-altruistic and biospheric consequences, which in turn elicits concern for those consequences. Environmental concern would then lead to a positive attitude towards eco-labeled electricity if eco-labeled electricity is perceived as a means of reducing the adverse consequences of environmental problems. In a final step, attitude towards eco-labeled electricity is assumed to positively influence SWTP, together with income (positively) and current level of electricity costs (negatively). For the sake of simplicity, the mediation model outlined above assumes full mediation in all steps, but it should be noted that there are reasons to anticipate partial mediation in the relationships between values and pro-

environmental intentions. Two reasons are that measurement scales are unlikely to reflect the full scope of a hypothesized mediator or that other, not hypothesized mediators exist (Zhao et al., 2010). Thus, value orientation, AC-beliefs, and EC-evaluations may also have direct effects (or indirect effects mediated by some unmeasured variables) on SWTP in addition to their indirect effects.

In order to test the relationships between the constructs, another survey ($n = 855$) of Swedish residents was conducted. The new AC and EC scales were shown to have acceptable reliability. In line with the hypothesis and findings in Study I, AC-beliefs were shown to partially mediate the effects of a self-transcendence value orientation on EC-evaluations. Self-transcendence was thus shown to also have direct effects on EC-evaluations. The self-enhancement value orientation was found to have no effects on AC-beliefs and EC-evaluations. The results further showed that EC-evaluations mediated the effects of value orientation and AC-beliefs on the attitude towards eco-labeled electricity. The mediation effects were partial since value orientation and AC-beliefs also had direct effects. The results suggest that attitude towards eco-labeled electricity has distinct value, belief, and evaluative determinants. Moreover, attitude towards eco-labeled electricity mediated the effects of value orientation, AC-beliefs, and EC-evaluations on SWTP. For self-transcendence and AC-beliefs mediation was shown to be partial whereas for EC full mediation was present.

In contrast to previous findings, no income effect was found. Still, SWTP for eco-labeled electricity was related to the current level of electricity costs. Households with high electricity costs were less willing to pay the greater cost for eco-labeled electricity than were households with low electricity costs.

Study III

Study I showed that when a consequence (egoistic, altruistic, and biospheric) is congruent with a value type, a positive relationship holds between the value type and environmental concern. In addition, Study II demonstrated a significant influence of value orientation on attitude towards eco-labeled electricity. Bringing these findings together, the aim of Study III was to examine whether it is possible to influence an environmental attitude by framing messages of environmental problems in terms of egoistic, altruistic, or biospheric consequences.

Therefore, in the context of a third survey of Swedish residents ($n = 476$), an experiment was conducted to assess influences of egoistically, altruistically, and bio-spherically framed messages on stated willingness to pay for eco-

labeled electricity. It was hypothesized that for individuals with a self-enhancement value orientation, an egoistic message would be more appealing than altruistic and biospheric messages, thus influencing those individuals to also express higher SWTP for eco-labeled electricity for the former than the latter messages. In contrast, for individuals with a self-transcendence value orientation, altruistic and biospheric messages would be more appealing than an egoistic message. Still, since Study II indicated that individuals with a self-transcendence value orientation already express a positive attitude towards eco-labeled electricity and therefore are willing to pay the higher cost for eco-labeled electricity, it was expected that framing would have little influence on these individuals.

In constructing a measure of value orientation in Study III, a new scaling procedure was applied. Instead of creating separate mean indexes for each value orientation from raw value ratings, as was done in Studies I and II, a single-factor Principal Component Analysis was performed on the correlations between mean-adjusted value ratings. The principal component scores obtained from the analysis were then used as a measure of a self-transcendence (ST) versus self-enhancement (SE) value orientation. This alternative measurement approach explicitly draws on the assumption that there is a conflict between SE and ST values in a circumplex value structure (see Figure 1). It also improves upon the measurement approach adopted in Studies I and II in as much as it (i) targets the relative and not absolute importance of SE and ST values, and (ii) increases measurement reliability due to the higher number of value items included in the single measure of SE versus ST.

The results showed a main effect of framing on SWTP for eco-labeled electricity, reflecting the fact that SWTP was higher for biospheric than for each of altruistic and egoistic framing of consequences. Yet, no difference in SWTP was demonstrated across egoistic and altruistic framing of consequences. Moreover, the measure of a ST (versus SE) value orientation was found to be positively related to SWTP, which essentially replicates the finding in Study II. Inconsistent with the hypothesis, the results provided no evidence for an interaction between value orientation and framing of consequences.

Study IV

The aim of Study IV was to explore whether there are situational factors that eliminate or at least attenuate the influence of value orientation on pro-environmental attitudes. Analyzing the survey data obtained in Study III ($n = 476$), effects of the ST versus SE value orientation on SWTP for eco-labeled

electricity were compared to corresponding effects on an equivalently measured stated willingness to reduce (SWTR) electricity consumption. The measure of the ST versus SE value orientation was the same as in Study III.

It was expected in Study IV that reducing electricity consumption would be regarded as a more difficult and situationally constrained behavior than purchasing eco-labeled electricity. Therefore, an ST versus SE value orientation would show weaker influence on SWTR electricity consumption than on SWTP for eco-labeled electricity. This would rule out the alternative explanation that SWTP and SWTR both reflect a general pro-environmental behavior orientation, and thus be equally positively related to a ST versus SE value orientation. The correlation between SWTP and SWTR would then be positive. Still another alternative is that if an ST versus SE value orientation influences people to choose eco-labeled electricity (as shown in Studies II and III), this choice would have a rebound effect on willingness to reduce electricity consumption, that is justifying people to consume even more electricity. Hence, SWTR would be negatively correlated with SWTP.

The results showed that as in Studies II and III, SWTP for eco-labeled electricity is positively correlated with an ST versus SE value orientation. In contrast, no relationship was demonstrated between SWTR electricity consumption and the ST versus SE value orientation. Moreover, the results showed that SWTR electricity consumption is only weakly positively related to SWTP for eco-labeled electricity.

Discussion

Summary

Numerous studies bear on the value-basis approach to environmental concern and pro-environmental behavior (e.g., Nordlund & Garvill, 2002; Schultz et al., 2005; Schultz & Zelezny, 1999; Stern et al., 1999; Stern et al., 1995). The tenet of this approach is that environmental concern and pro-environmental behaviors are motivated by beliefs about and concerns for adverse consequences of environmental problems for valued objects (i.e., oneself, other people, and the ecosystem). Building on this approach, the present thesis examined and provided empirical evidence for significant relationships between value orientations/types and beliefs about and concern for consequences of environmental problems. While the theoretical and empirical foci were on the “value-belief-concern” relationships, the focus of application was on attitudes towards pro-environmental behaviors in the domain of household electricity consumption (i.e., purchasing eco-labeled

electricity). The results suggest that such attitudes are influenced by values, beliefs, and environmental concerns, but that situational factors impose boundary conditions on this influence.

Interpretation of Results

Value orientation. First, biospheric items were removed from measures of universalism (Study I), self-transcendence (Study II), and self-transcendence versus self-enhancement (Studies III and IV) in the studies, with the aim of controlling for criterion contamination as an explanation for previously reported relationships between self-transcendence, on the one hand, and biospheric AC-beliefs, EC-evaluations, and pro-environmental attitudes, on the other hand. In line with the hypotheses, the results of Study I showed that a universalistic value type relates positively to biospheric AC-beliefs and EC-evaluations, whereas a benevolent value type relates positively to social-altruistic AC-beliefs and EC-evaluations. In addition, Study II showed a positive relationship between self-transcendence and an aggregate measure of biospheric, social-altruistic, and egoistic EC-evaluations as well as a positive relationship between self-transcendence and SWTP for eco-labeled electricity. The latter relationship was replicated in Studies III and IV. Taken together, these results apparently reject item similarity as an explanation of previously reported relationships between self-transcendence and biospheric AC-beliefs and biospheric EC-evaluations (e.g., Schultz, 2001; Schultz & Zelezny, 1999; Steg et al., 2005; Stern et al., 1995; Stern & Dietz, 1994). Note that Schultz et al. (2005) have also reported positive relationships between universalism and biospheric environmental concerns, with and without including biospheric value items in the universalism measure.

The results challenge the assumption made in previous studies of a distinct biospheric value type (see De Groot & Steg, 2007; Steg et al., 2005), at least as an explanation of biospheric AC-beliefs and EC-evaluations. Rather, the present results suggest that biospheric AC-beliefs and EC-evaluations have a broad social altruistic (universalistic) value basis, and that social-altruistic AC-beliefs and EC-evaluations have a narrow social altruistic (benevolent) value basis.

Questions can still be raised regarding the mechanisms driving these relationships. At a conceptual level, the universalistic values referred to in this thesis (i.e., social justice and equality) do not match or imply biospheric entities (e.g., animals and plants). Consequently, it is problematic to interpret biospheric EC-evaluations as an effect of universalistic values per se or as an

effect of beliefs about consequences for valued entities at all.² An alternative interpretation has been proposed by Schultz et al. (2004), who assume that it is not universalistic values per se but extensive self-construal (i.e., inclusion of nature in self) reflected in a universalistic value type that gives rise to biospheric environmental concerns. This approach also seems to resemble the way universalism is conceptualized in Schwartz (1992), where the motivational focus of universalism is assumed to be on all people *and* nature.

Regarding the finding of a positive relationship between benevolence and social-altruistic AC-beliefs and EC-evaluations, a first interpretation is that this relationship may partly be explained by the use of two in-group altruistic items in the social-altruistic EC scale ("my children" and "people in Sweden") corresponding to benevolence values. A benevolent value type would thus relate to social-altruistic AC-beliefs and EC-evaluations, primarily when these are measured with reference to in-group members (Gärling, 1999). On the other hand, the social-altruistic EC scale also included two broader types of social-altruistic items ("all people" and "children"). Benevolence may therefore relate to broader social-altruistic concerns as well, although it can be questioned whether concerns for "children" and "all people" really refer to wide social-altruistic concerns. "Children" is in fact a subcategory of "all people" that still might be construed as an in-group. Likewise, "all people" might be construed as an in-group when contrasted with animal species. What are close others and in-groups is a matter of what are salient comparisons.

Previous studies have failed to show positive relationships between a self-enhancement value orientation and egoistic AC-beliefs (e.g., Stern et al., 1995), although positive relationships have been found between this value orientation and egoistic EC-evaluations across cultures (Schultz et al., 2005). By not reverse-coding the items "Laws that protect the environment limit my choices" and "Protecting the environment will threaten jobs for people like me" (and by removing the item "A clean environment provides me with better opportunities for recreation), treating agreements as indicating high awareness of egoistic consequence, positive relations with power and egoistic EC-evaluations were reported in Study I. Achievement was found to be unrelated to egoistic AC-beliefs and EC-evaluations.

An additional difference that was found between achievement and power was that the former value type related negatively to social altruistic EC-evaluations, whereas the latter value type was not related to these evaluations.

²Note, however, that biospheric EC-evaluations can still follow from beliefs about biospheric consequences. Beliefs about consequences and beliefs about consequences for valued objects are conceptually different.

In the light of the finding of a positive relationship between benevolence and social-altruistic EC-evaluations, this result seems to indirectly replicate the value structure proposed in Schwarz (1992), in which benevolence and achievement value types are opposite poles on the self-enhancement-to-self-transcendence continuum. Power and universalism are also opposite value types on this continuum and were consequently found to be negatively and positively, respectively, related to biospheric EC-evaluations. Taken together, the results of Study I illustrated the usefulness of distinguishing value type and value orientation in the study of environmental concern.

Moreover, a profound problem with the egoistic AC scale is that it measures beliefs about adverse or positive egoistic consequences (the latter when reverse-coding the items) of the attitude object “environmental protection”. Theoretically, the measure should target beliefs about adverse consequences of “environmental problems” for people themselves (e.g., ones’ own health). Yet, only one egoistic AC-belief item appears to measure this (“a clean environment provides me with better opportunities for recreation”). As indicated above, this item was not possible to combine with the other items in a reliable way, neither for a reverse or direct coded scale. It should be noted that in line with the findings in Stern et al., (1995), this item was positively related to universalism but not related to power. In Study II where EC-evaluations were measured in relation to specific environmental problems, no relationship was demonstrated between egoistic EC-evaluations and self-enhancement, either when these evaluations were indexed separately or when indexed in conjunction with social-altruistic and biospheric EC-evaluations. Instead, the results showed that self-transcendence is positively related to all types of EC evaluations. A similar result was obtained in Study III, in that an egoistically framed message highlighting adverse consequences of environmental problems for one’s own health had no influence on environmental concern expressed by individuals with a self-enhancement value orientation.

A conclusion based on the present studies is that self-enhancement/power first and foremost is related to beliefs about egoistic costs of environmental protection. Self-transcendence/universalism may still be the value orientation/type positively related to beliefs about adverse egoistic consequences of environmental problems. Of these two it is only the latter type of beliefs that reasonably can motivate pro-environmental behaviors. The former seems in fact to prevent individuals from performing such behaviors.

AC-beliefs and EC-evaluations. Previous conceptualizations and measures of environmental concern (e.g., the NEP scale, Dunlap & Van Liere,

1978) have deviated from the way attitudes have been conceptualized and measured in social psychology (Eagly & Chaiken, 1998). A variety of measurement scales have been developed (Bamberg, 2003; Fransson & Gärling, 1999), of which environmental-concern evaluations (EC-evaluations) and awareness-of-consequences beliefs (AC-beliefs) are two examples.

In the present thesis a distinction was made between AC-beliefs and EC-evaluations. The results of Studies I and II showed that AC-beliefs partly mediated the relationships between value type/orientation and EC-evaluations. Additional support for the proposed distinction was also obtained in Study II, in that AC-beliefs and EC-evaluations were found to be uniquely related to attitude towards eco-labeled electricity. The AC-beliefs in Study II were measured indirectly, however, as beliefs about the likelihood of specific environmental-problem events (e.g., deforestation of rain forests). Although the events mentioned can have their own consequences, that thus were not measured, they can also be seen as consequences of an encompassing, “higher-order event” (i.e., environmental problems in general). According to this argument, “deforestation of rain forests” would, for instance, resemble a biospheric consequence.

Study I showed that egoistic, social-altruistic, and biospheric EC-evaluations were uniquely related to egoistic, social-altruistic, and biospheric AC-beliefs, respectively. But since a correlational approach was used in the study, interpretations of causality remain unsettled. A conceptual rationale for interpreting AC-beliefs as causally preceding EC-evaluations is that environmental concern for specific consequences seems to presuppose a belief in the occurrence of consequences (Study I), or a belief in the occurrence of the events producing the consequences (Study II). The alternative assumption that individuals are first concerned for specific consequences and events and that they then become aware of the consequences and events does not make theoretical sense. Individuals may however have value priorities, then attend selectively to, become knowledgeable about, and develop concern for specific consequences and events.

Whether concern for consequences is based on a probability threshold or increases continuously with subjective probability of the consequences is an issue that needs further discussion. Although probability beliefs were not assessed directly in the present studies, the positive relationships found in Studies I and II between AC-beliefs and EC-evaluations seem to suggest a continuous relationship. This would also be in line with protection-motivation theory (Rogers, 1975) that proposes that fear is in part a function of perceived probability of threat. The theory of planned behavior (Ajzen, 1991) also

assumes that an attitude is decomposed into beliefs about and evaluations of consequences. This implies that beliefs about specific consequences are correlated with overall attitudes towards objects, but beliefs are at the same time assumed to be uncorrelated with evaluations of specific consequences or features of the objects.

Furthermore, a finding in Study I was that the AC-belief scales have low reliabilities, which in fact replicates results of several previous studies (Gärling et al., 2003; Joireman, et al., 2001; Snelgar, 2006; Stern et al., 1993). Measurement error might thus have weakened the relationships between AC-beliefs, on the one hand, and EC-evaluations and value types, on the other hand (see e.g., Crocker & Algina, 1986). Yet, it can also be argued that the (strong) negative framing of the scale items of AC-beliefs (i.e., “pollution generated in one country *harms* people all over the world” and “protecting the environment *threaten* jobs for people like me”) might have increased the relationship. This would be consistent with the central finding in previous research that losses compared to gains are overweighed in people’s judgments (Tversky & Kahneman, 1991). Future research needs to develop better measures of awareness of consequences that clearly distinguish the belief component from the evaluative component. A possibility would be to develop a measurement method like that used in the many applications of the theory of planned behavior (Ajzen & Fishbein, 1980). With such a method of measurements it may be possible to conclusively infer how the belief and evaluative components relate to each other and to value types. The measure of AC-beliefs in Study II was a first step toward such a measurement method. The measure was shown to be reliable and have distinctive association with attitude towards eco-labeled electricity (i.e., discriminating it from the measure of EC-evaluations). Nevertheless, it may have assessed AC-beliefs too indirectly, was still substantially correlated with the measure of EC-evaluations, and was not subject to test by means of confirmatory factor analysis.

Situational influences. In Study III salience of egoistic, altruistic, and biospheric consequences of eco-labeled electricity choice was manipulated. It was shown that pro-environmental behavior intention, as indicated by SWTP for eco-labeled electricity, is stronger when biospheric consequences are salient than when egoistic and altruistic consequences are salient. A first issue that needs to be addressed is whether the treatment made equally salient the consequences. As an *eco*-labeled choice per se may signal high expectancy for biospheric consequences, it may be difficult to reframe such a choice to signal equally high expectancies for egoistic and altruistic consequences. A previous

finding that bears on this argument is that a consequence that is representative for a category is believed to be more likely than a consequence that is not as representative for the category (Gilovich et al., 2002). Accordingly, it may be argued that the biospherically framed consequences were more salient than the egoistically and altruistically framed consequences, and that the framing effect may thus have been mediated by equivalent differences in AC-beliefs. In other words, egoistic and altruistic arguments for purchasing eco-labeled electricity may have been perceived as less credible and reliable than biospheric arguments. This account points to the possibility that AC-beliefs (and hence EC-evaluations, cf. Studies I and II) may be influenced by situational characteristics and not exclusively by value orientation (see Garcia-Mira et al., 2005; and Kortenkamp & Moore, 2001, for situational approaches to environmental concern). Our second finding that value orientation did not moderate effects of framing may then suggest that an influence of value-orientation can be overruled by situational influences.

Assuming that the treatment made equally salient each consequence (e.g., equal expectancies), could the framing effect still have occurred? Perhaps it could have, since framing may have directly influenced the *affective* component of environmental concern, and affect associated with biospheric consequences may be positively over-weighted in pro-environmental attitude expression. Previous research has shown that among ECego, EChum, and ECbio, the latter tends to have a stronger positive influence on pro-environmental attitude expression and behavior intention (Milfont et al., 2006; Schultz et al., 2004).

In Study IV further light was shed on situational influences. The results showed that while a self-transcendence (versus self-enhancement) value orientation has an effect on SWTP for eco-labeled electricity (cf. Studies II and III), it has no effect on stated willingness to reduce electricity consumption (SWTR). Provided that purchasing eco-labeled electricity and reducing electricity consumption both are pro-environmental behaviors, and since a self-transcendence value orientation is generally found to be related to such behaviors, these findings apparently reveal important barriers for the influence of value orientations. One such barrier is behavioral difficulty (Diekmann & Preisendörfer, 2003). Purchasing eco-labeled electricity is a “one-shot” behavior that is easy to perform (and generally has low financial costs), whereas reducing electricity consumption is a relatively high-cost behavior that is difficult to perform in as much as it entails changing habits, learning about how and what to do, and possibly installing expensive energy-efficient appliances. It follows from the low-cost hypothesis (Diekmann &

Preisendörfer, 2003), that value orientation should have a stronger influence on SWTP and a weaker influence on SWTR. Such moderation not only holds true for influence of value orientation on actual behavior but generalizes to intention to perform behavior and to attitude towards the behavior.

The different influences of value orientation on SWTP and SWTR also may be seen from another perspective. The effect of a self-transcendence (versus self-enhancement) value orientation on SWTP could reflect the fact that in choices of eco-labeled electricity egoistic and environmental gains are in conflict (in Sweden one must generally pay a surcharge for eco-labeled electricity). For reducing electricity consumption, no such conflict is present. SWTR was measured for increasing electricity prices, which should have made salient that egoistic (financial) and environmental gains are positively correlated. Indeed, when decomposing the self-transcendence versus self-enhancement measure into separate measures of self-enhancement and self-transcendence, both measures were shown to be uniquely positively related to SWTR. However, together they accounted for only 1% of the variance in SWTR, which is significantly lower than the 8% accounted for in SWTP. Therefore, although the use of a self-transcendence versus self-enhancement value orientation measure seems to have masked minor effects of value orientation on SWTR, the overall conclusion remains the same: value orientation has at most marginal influence on SWTR and a stronger influence on SWTP, most likely due the higher behavioral difficulty associated with reducing electricity consumption. Corroborating the present findings, Barr et al. (2005) have shown that people classified as high energy savers with regard to habitual energy-saving (e.g., reducing heat in unused rooms) and purchase-related behaviors (e.g., buying low-energy light bulbs) are not more oriented towards self-transcendence values than are people classified as low energy savers.

Conclusions

This thesis has focused on the value, belief, and situational components of environmental concern and on how these components interrelate in forming environmental concern. The results suggest that value orientation/type has direct and indirect effects on environmental concern, the latter mediated by (i) beliefs about the likelihoods of occurrence of environmental problems, (ii) beliefs about occurrence of adverse consequences of these problems, and (iii) beliefs about consequences of environmental protection. In addition, situational factors were shown to affect environmental concern independently of value

orientation and to moderate relationships between value orientation and environmental concern.

The distinction between AC-beliefs and EC-evaluations has rarely been made explicit in previous research. Still, future research needs to develop better measures of AC-beliefs that should clearly distinguish the belief component (e.g., how likely a consequence is) from the evaluative component (e.g., how good or bad the consequence is). The measures used in Study II were a first, yet incomplete step towards such a measurement approach as AC-beliefs were assessed indirectly and found to be substantially correlated with EC-evaluations. Future research should also use structural equation modeling to examine the validity of the proposed components. This may clarify how these components are interactively influenced by value orientation and situational factors (e.g., representativeness of consequences).

Positive relationships were demonstrated between universalism (measured without biospheric items), ACbio, and ECbio, and between a benevolence value type, AChum, and EChum. A possible implication of this finding is that the assumption of a distinction between biospheric and altruistic value types is redundant. It should be acknowledged that the distinction still may be relevant for explaining certain decisions where universalistic and biospheric value types may be in conflict (De Groot & Steg, 2007). For instance, the choice of donating to a human-rights organization may be guided by universalism, whereas donating to an environmental organization may be guided by biospheric value type.

Furthermore, the positive relationship that was shown between power and ACself seems to reflect an “anti-environmental orientation”, as the present ACself items measured beliefs about adverse egoistic consequences of environmental protection. Yet, the positive relationship shown between power and ECself (and between ECself and ACself) would imply a pro-environmental orientation, that is concern for egoistic consequences of environmental problems. Since a message framed in line with ECself had no influence on “self-enhancers” pro-environmental orientation, two conclusions are warranted: (i) power is not related to concern for egoistic consequences of environmental problems but to concern for personal costs of environmental protection, and (ii) current measures of ECself may lack construct validity. Alternatively, a power value type may foster inconsistent environmental beliefs or evaluations (e.g., “environmental problems threaten my health” and “environmental protection threatens my personal freedom and wealth”).

Future Research Directions

An issue in need of further research is to what extent the relationships between value orientations and environmental concern are moderated by (i) form, (ii) transparency, and/or (iii) magnitude of conflicts among pro-selfish, pro-social, and pro-environmental outcomes. As discussed above, when pro-social and pro-environmental outcomes are set up to be in conflict, as in a choice between donating to a human-rights or environmental organization, the relationship between self-transcendence and environmental preference tends to be reduced (De Groot & Steg, 2007). In general, however, promoting human welfare and protecting the environment are harmonizing interests in that human wellbeing is dependent on existence of uncontaminated environments. Also, pro-social and pro-environmental behaviors have in common that they both entail self-sacrificing behavior to a higher or lower extent.

Therefore, a more typical form of conflict may refer to that pro-environmental and pro-social outcomes are at odds with pro-selfish outcomes. It may be hypothesized that to the extent that the transparency of this conflict is varied, the relationship between a self-enhancement versus self-transcendence value orientation and environmental concern or behavior would change accordingly. For instance, value orientation may be shown to have no influence on choices between standard and ecological alternatives as long as the latter are equally or less expensive than the former, since there would be no apparent conflict between pro-selfish and pro-environmental outcomes. This implies that when an environmental alternative incur a surcharge, conflict is constructed between pro-selfish and pro-environmental outcomes. As a consequence, value orientation would regain its influence on such choices. While it is possible that influence of value orientation can be further increased by increasing the magnitude of conflict (e.g., raise surcharges), future research may in fact confirm that it is not so much the magnitude as it is the presence and transparency of conflict that strengthens the influence of value orientation.

A risk or possibility associated with making ecological alternatives cheaper than standard alternatives is still that this may “crowd out” self-transcendence motives in pro-environmental behavior (Frey & Jegen, 2001). To what extent “crowding in” of self-enhancement motives will then compensate for the “crowding out” of self-transcendence motives is an important question for future research.

A final issue concerns whether willingness to contribute compared to reluctance to contribute to environmental protection are outcomes of the same or different processes. Typically, these have been seen as products of the same process that can be essentially depicted as: Value orientation → environmental

concern → willingness/reluctance to contribute. In view of the present findings, it may still be conjectured that reluctance, as associated with self-enhancement, is mediated specifically by a negative evaluation of “costly” environmental policy measures (i.e., concern for personal costs), whereas willingness, as associated with self-transcendence, is mediated specifically by a negative evaluation of “severe” environmental problems (i.e., concern for environmental problems). Since aversion to counter-measures may undermine concern for targeted problems in line with the mechanisms outlined in cognitive-dissonance theory (Cooper, 2007), reluctance should be conceptualized as a determinant rather than as an outcome of low environmental concern. But willingness to contribute should still be seen as an outcome of high environmental concern. It is thus implied that people are willing to pay for environmental policy measures not because they like to pay but because it is a solution to a worrisome problem.

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