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With special thanks to Sloan Lindsey and the rest of my family.

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1 INTRODUCTION

Why do people care about environmental protection? There are many studies trying to answer this question, linking sociodemographic factors such as age, social class, or place of residence to an individual's level of environmental concern. Additionally, people's value systems are believed to influence whether or not they behave pro-environmentally. Most research on environmentalism focuses mainly on Western societies, but several studies find that concern for the environment seems to be a global phenomenon (i.e. Dunlap, Gallup and Gallup 1993; Inglehart 1995). However, research on environmentalism in the East Asian region has been sparse.

Throughout East Asia, environmentalism seems to have emerged in response to economic development. In Japan, the environmentalist movement started out in the 1960s as protests against industrial pollution. With growing prosperity, the movement eventually evolved into battling pollution caused by urban lifestyles. Similarly, South Korea's and Taiwan's environmental movements emerged in response to ecological problems that came with their industrial development. Environmentalism started as a new social movement after their democratic transitions. China's industrialization has similar features, and local protests and riots about environmental issues are on the rise. Globalization as well as economic and political reform have contributed not only to the exploitation of natural resources but also to an increasing consciousness about the environmental exploitation.

Economic development is linked to the exploitation of the environment, and more economic output leads to increased popular demand for a continuous flow of goods and services. Consumers' decisions and behaviors have a wide reach which extends beyond national to global scales, and they have the power to accelerate ecological degradation (Liu and Leiserowitz 2009: 44). Conventional wisdom has it that affluent countries would be better able to afford an environmental protection apparatus and use less extractive and exploitative means of maintaining their economic prowess. But even though such environmental policies and institutions also exist in some severely polluted countries, like China, their implementation is lacking (see Heggelund and Backer 2007). It seems that a mere top down approach is not enough to lead to environmental soundness; the support of the people is needed in order to combat environmental degradation. In short, environmental protection depends on the pro-environmental behavior and concern of a society's citizens.

1.1 Research Objectives

Is it possible to discern the driving forces of pro-environmental individuals in East Asia? Are they citizens who are geographically close to grave environmental problems? Does income matter? In what way? Are older people more or less likely than young ones to be supportive of environmentalism? What roles do other factors such as education, gender and personal values play? These considerations will be taken as the starting point for this thesis and, based on the questions above, environmental concern in East Asia will be explored. Consequently, the research question of this paper is:

What are the factors that influence environmental concern in Chinese, Japanese, South Korean and Taiwanese individuals?

The following questions will guide this study:

- What is environmental concern and how can it be measured?
- Is age correlated with environmental concern? If so, how?
- How are gender, education and income linked to environmental concern?
- Are East Asian citizens who live geographically close to environmental problems more concerned about the environment than people who do not?
- How are people's values related to environmental concern?

In order to answer these questions, I will first lay out the theoretical groundwork that forms the basis of these considerations. In the next step, data from the fifth wave of the World Values Survey (WVS, 2005-2008) will be analyzed using a derived metric for environmental concern which is cross-tabulated with social and environmental issues. The WVS is a global survey designed to assess values and beliefs of populaces all over the world. In order to put the findings into perspective, informal qualitative interviews with East Asians were carried out on their perceptions of environmental concern.

This thesis aims to determine which factors influence the environmental concern of East Asian individuals. According to Dunlap and Jones, there are two ways to approach environmental concern. One focuses on attitude theory and the investigation of respondents' beliefs, attitudes and behaviors, while the other one concerns itself with environmental issues and how they relate to policy (Dunlap and Jones 2002: 489). In this thesis, the first approach is chosen, and besides attitudinal and value factors, sociodemographic factors will help paint a

clearer picture of environmental concern in Chinese, Japanese, Korean and Taiwanese populaces.

1.2 Relevance

Before we turn to the subject matter at hand, why bother explaining environmental concern in the first place? Why should anyone care which factors are linked to concern for the environment? Determining what influences environmental concern among East Asian populaces is interesting for a number of reasons. Concern for environmental quality is relevant in the mobilization of people for the environmental cause. As Stern et al. put it, “[p]ublic support is one of the most important resources social movements mobilize in their efforts to overcome cultural inertia and the interests of powerful actors” (Stern et al. 1999: 81). Environmental concern varies across nations and publics and the globe. Studying those differences and the underlying sources of them is crucial, because to know them means to be able to mobilize people better. If we know which factors influence environmental concern, then strategies for the mobilization of East Asian citizens for the environmental cause can be adjusted accordingly. Why is it necessary to mobilize people to care about the environment, though? One common reason is environmental agreements. Such agreements often mean that a nation has to change the way it makes and uses energy; therefore they are difficult to implement without the support of the public (Franzen and Meyer 2010: 219-20). The grave environmental problems the world is facing today are at least in part caused by people's behaviors. Although the concrete link between concern and behavior is disputed, as will be discussed below, people's actions are shaped by their perceptions. If people can be mobilized to care for the environment, then it is likely that their behavior towards it might become more pro-environmental. In the long run, increased environmental activism and environmentally responsible behavior might lead to an improvement of the precarious state of the global environment.

After decades of economic development, the East Asian region is facing a multitude of environmental problems, ranging from limited natural resources to severely degraded local environments. In addition to those local, site-specific problems, issues like global warming are increasingly threatening the well-being of East Asians. Overcoming those challenges relies on the support of the masses. Studying which factors are linked to the environmental concern of East Asians is therefore increasingly important.

I acknowledge that it is quite impossible to pin down exactly which factors consistently predict environmental concern in a region as large and diverse as East Asia, or even in just one of the East Asian countries. It is however possible to assess which factors predominantly tend to influence concern for the environment in sample groups. Therefore, the following elaborations on factors influencing environmental concern are those that are found to be predominantly present in a population sample of the country in question. Thus, the goal is to find out the tendencies within the four East Asian countries with respect to different influencing factors. Moreover, correlation between factors does not necessarily mean causation. This thesis aims to assess which factors are linked to environmental concern, without implying that they are directly responsible for it.

1.3 Literature Review

Several studies deal with the subject matter of environmental concern, and the components which play a role in this regard. Van Liere and Dunlap (1980) review five general hypotheses with respect to the social underpinnings of environmental concern and discuss empirical evidence for these hypotheses. These will be explained in detail in section 2.2.1, as they make up the sociodemographic factors. While sociodemographic factors were first believed to be strongly correlated to environmental concern, values later took center stage. Many of the more recent studies therefore deal with values as the basis for environmentalism. The George Mason University group (Stern 1992; Stern and Dietz 1994; Dietz, Stern and Guagnano 1998; Stern et al. 1999; Stern 2000) published on the link between values, beliefs, attitudes and behavior. They tried to find the universal values that underly pro-environmental attitudes. Their values-beliefs-norms theory is dealt with in the concepts section (2.2.2). With regard to values, many sources mention or criticize Inglehart's postmaterialism theory. Inglehart (1990, 1995, 2000) wrote extensively on value change and is a driving force behind the WVS, which provides part of the data for the analysis in this thesis. His claims are laid out in detail in section 2.2.4.

A large number of studies deal with environmentalism in the context of European and American societies, but an increasing number also focuses on the Asian and East Asian region. Here, many studies can be found about China and Chinese publics' environmental attitudes. Harris (2006) gives an overview of surveys and reports on environmentalism in China, and discusses their findings. Several papers explore which factors influence respondents' pro-environmental actions or attitudes based on regional surveys (Wong 2003; Stalley and Yang 2006; Shen and Saijo 2008; Liu et al. 2010; Xiao and Hong 2010, 2012;

Feng and Reisner 2011). Japan is the subject of some studies which also try to determine how certain factors influence environmental attitudes (Barrett, Kuroda and Miyamoto 2002; Fujii 2006). Literature on Korean environmentalism was more difficult to find. This paper references Eder (1996) and Kern (2010). Kern (2010) focuses on characteristics of the development of Korea's environmental movement. Only few papers deal exclusively with Taiwan and environmental concern. Hsiao's (1990) essay deals with the origins and characteristics of Taiwan's environmental movement. Unfortunately, some of the papers concerned with environmentalism in Asia are rather poorly conceptualized or carried out, with bad grammar and typos (i.e. Liu et al. 2010; Kim and Kim 2010).

The analysis in this thesis draws mostly on data from the World Values Survey (WVS). The WVS is a worldwide survey that uses standardized cross-cultural measures to assess the values of different nations' publics. So far five waves have been carried out since the 1980s; the sixth wave is currently underway. Items on the questionnaire range from values concerning work ethic to political participation, religion, family, and environmental protection. The WVS is a valuable data pool which many social scientists base their research on (i.e. Flanagan and Lee 2000; Dalton and Ong 2005; Steinberg 2005; Gelissen 2007; Kern 2010; Kim and Kim 2010; Givens and Jorgenson 2011; Wong and Wan 2011; Cin 2012; Running 2012; Zhao 2012). This thesis will make use of the raw data collected in the fifth wave of the WVS in East Asia in original research.¹

During the research for this thesis, I found two papers dealing with environmental concern in East Asia that also used data from the WVS. Kim and Kim's (2010) study links several factors to environmental attitudes across 17 pages. Their factors include some sociodemographic factors, postmaterialism, conservatism, egoistic value, feminism and religiosity. Exposure to environmental degradation and faith in science are two factors that are not taken into account in their paper. Moreover, their conceptualization of conservatism is quite narrow compared to the authoritarian and libertarian factors used in this analysis. The second similar paper is a dissertation: Choi (2011) analyzes environmentalism in six Asian countries, based on WVS data. Different from the approach in this thesis, he separately correlates specific notions of environmental concern (participation in environmental organizations, the difference between perceived severity of local and global concern, and responsibility of government to provide environmental protection) as separate independent factors with sociodemographic, cultural and postmaterialist factors. This thesis shares a similar approach to these two papers, but both the methodology and the choice of factors differ.

1 The WVS data can be accessed at www.worldvaluessurvey.org.

Overall it can be said that the research and literature on environmental topics in East Asia are not (yet) as prevalent as in the economic field, but they are on the rise, especially in China, because environmental quality is increasingly seen as an integral part of sustainable development. The works named above will provide the basis for this thesis.

1.4 Structure

As for the structure of this thesis, the introduction and literature review is followed by the analytical framework. There, important terms are defined and the concepts that will be used are elaborated on. The method that will be employed in this thesis is explained in chapter 3. In chapter 4, relevant data from the WVS is analyzed to explore how the different factors are related to environmental concern in East Asian populaces. Answers from the qualitative interviews with East Asians are interwoven in this section as support for the findings from the analysis. The discussion of these findings takes place in chapter 5.

2 ANALYTICAL FRAMEWORK

2.1 Terms and Definitions

There is an abundance of studies focused on environmental concern, environmental values, environmental awareness, environmental attitudes etc. The key terms that will be used throughout this paper are defined below.

2.1.1 Environmental Concern

In order to grasp the meaning of environmental concern, it is helpful to first define both words in their own right. So what does “environmental” mean? “Environment” is a very ambiguous term; it can be taken to mean several different things, ranging from the objects physically surrounding one's immediate space to specific settings to nature or wilderness. According to the Webster's New World Dictionary, the term “environment” denotes “all the conditions, circumstances, and influences surrounding, and affecting the development of, an organism or

group of organisms”². An “environmentalist” is defined in the same source as “a person working to solve environmental problems, such as air and water pollution, the exhaustion of natural resources, uncontrolled population growth, etc.”³. In defining “environment,” a distinction can be made between “green” things surrounding us, such as the natural world, and “built” things, such as man-made infrastructure (Lowry 2009: 112). In this thesis environmentalism and environmental problems will be taken to refer only to the “green” environment.

Another word that is often used in relation to the environment is “ecology.” Unlike “environment,” “ecology” actually refers to the environment in relation to the “living organisms” that inhabit it.⁴ “Ecological” is often used more or less synonymously with “environmental,” although the latter usually denotes more specific settings, while “ecological” also transports the image of whole interconnected ecosystems.

As Heberlein points out, people never experience the environment in its totality, but only certain aspects of it, such as specific trees, rivers, etc. (Heberlein 1981: 243, quoted in Dunlap and Jones 2002: 483). Because the environment holds so many different connotations, there is a multitude of ways of classifying environments and environmental issues (see Dunlap and Jones 2002: 484, 487-8).

Let us now consider “concern.” Like “environment,” “concern” can be defined in several ways. For Dietz, Fitzgerald and Shwom, concern includes “both a sense that something is important and a belief that it may be at risk” (Dietz, Fitzgerald and Shwom 2005: 351). In that sense, when someone fears for the security of an object that is valuable to them, they are concerned about it. Consequently, people show environmental concern if they – through statements or actions – show that they care about the environment and believe it to be endangered.

Throughout the relevant literature, several different concepts for environmental concern can be found. Dunlap and Jones see concern for the environment as “the degree to which people are aware of problems regarding the environment and support efforts to solve them and/or indicate a willingness to contribute personally to their solution” (Dunlap and Jones 2002: 485). This “willingness to contribute” is often called “willingness-to-pay” in the relevant literature. As will be shown later, using “willingness-to-pay” to measure environmental attitudes can be problematic.

Franzen and Meyer's definition includes the human responsibility for environmental problems; they define environmental concern as “the awareness or insight of individuals that

2 Webster's New World Dictionary, 1978 ed., s.v. “environment.”

3 –. s.v. “environmentalist.”

4 –. s.v. “ecology.”

the natural state of the environment is threatened through resource overuse and pollution by humans” (Franzen and Meyer 2010: 220). Perhaps similarly, for Fujii (2006) environmental concern is tied to awareness of the consequences of one's actions. This awareness would motivate people to act in a way that minimizes negative consequences (Fujii 2006: 266). An internal view of an object would thus be linked to an external behavior towards it.

Some scholars link environmental concern with subjective beliefs about environmental issues. Fransson and Gärling, for example, associate environmental concern with “a general attitude or value orientation” towards the environment (Fransson and Gärling 1999: 370). Values take center stage in several of the theories explaining the driving forces of environmental concern. Milfont, Duckitt and Cameron take environmental concern to mean “the affect associated with beliefs about environmental issues that are expressed through three environmental motives, namely biospheric, egoistic or altruistic concerns” (Milfont, Duckitt and Cameron 2006: 747). That is to say, people judge environmental issues based on what they think the benefits or costs will be for the biosphere (all ecosystems including all living organisms), themselves or other people, respectively. These three specific value orientations will be elaborated on in section 2.2.2.

Several sources go to great lengths explaining the differences between environmental attitudes, values, concern and awareness. But according to Dunlap and Jones, environmental concern is a very broad concept that incorporates many of these terms. For them, concern includes environmental attitudes and even behavior (Dunlap and Jones 2002: 490). For this reason, a very detailed in-depth distinction between attitudes, values, beliefs, and awareness will be foregone here. In this study, Dunlap and Jones' approach is followed; they equate environmental attitudes with environmental concern, because both include being aware of environmental issues and supporting environmental protection (Dunlap and Jones 2002: 484-5). So for the purpose of this paper, environmental concern is tied to the awareness of environmental problems and a preference for environmental protection over economic growth. Moreover, willingness-to-pay plays a role. The precise components of environmental concern as it is used in this thesis are discussed in section 3.3.1.

At this point, it is important to emphasize that perceptions of the environment are different in different societies and cultures. Nature is seen through a “cultural filter,” as Pepper emphasizes (1996: 6). Consequently, there are differences in the way and degree that people are concerned about the environment. Apart from being seen as a provider of resources for humans to exploit, the natural world often holds sentimental connotations of being pure and uncorrupted as opposed to urban life. Meyer et al. indicate that a more scientific view of

planet Earth has helped shape the perception of nature as an “interdependent ecosystem” (Meyer et al. 1997: 630). This changing view of the environment has been mirrored in scientific studies of environmentalism as well. Studies of attitudes towards the environment in the 1960s and 1970s focused mainly on local pollution. Broader environmental issues like acid rain, toxic waste and nuclear power took center stage in the 1970s and 1980s. In the 1990s, problems like climate change and loss of biodiversity became prominent and were featured in many surveys (Dunlap and Jones 2002: 483-4). As environmental problems have become increasingly global and invisible, people have been distanced from them because often they cannot experience them directly.

Before going in medias res, I would like to briefly elaborate on the relationship between environmental concern and pro-environmental behavior. It would seem logical to assume that people who care about the environment will behave in a pro-environmental way⁵. A number of sources claim that there is indeed a positive connection between concern and behavior (i.e. Dunlap et al. 2000; Fujii 2006). However, some other studies conclude that being concerned about the state of the environment does not necessarily lead to environmentally responsible behavior (i.e. Olli, Grendstad and Wollebaek 2001). Moreover, as Stern emphasizes, many behaviors are done out of habit or because of personal constraints. Also, people may believe that their choice or action is environmentally friendly, but they may in fact be wrong (see Stern 2000: 415). Even though we cannot be sure about the relationship between concern and behavior, exploring concern is useful. Wong and Wan consider environmental concern to be important in two ways: as a motivator for pro-environmental action, and as a basis for influencing other societal actors to behave more environmentally friendly (Wong and Wan 2011: 235). As Wong puts it, people's “perceptions are important steps towards action” (Wong 2003: 520).

2.1.2 East Asia

Defining East Asia is not quite as simple a task as one might imagine it to be. In the case of countries, fixed borders make the matter of defining them a relatively easy feat. The region of East Asia, however, does not have clear borders. Moreover, it is a concept alien to the peoples inhabiting it. East Asia is a European construct, as Weigelin-Schwiedrzik (2004: 9) notes. She sees it as an ideological term which makes China, Japan and Korea a cultural unit as it is imagined by the European mind (Weigelin-Schwiedrzik 2004: 9-10). Similarly, Sivin and Ledyard point out that the very term “East Asia” was introduced to the “East Asian” peoples

5 For a distinction of different types of environmental behavior, see Stern 2000: 409-11

by the West (Sivin and Ledyard 1994: 23). Defining East Asia geographically has often served the purpose of enforcing geopolitical ideas such as the Greater East Asia Co-Prosperty Sphere, with which Japan tried to extend its sphere of influence around 1940 (Sivin and Ledyard 1994: 23). Rather than designating a geographical unit, “East Asia” serves the purpose of uniting several countries in the region on a cultural level. To the Western observer, East Asia may be a quite homogeneous area with similar customs and a shared traditional culture. But it is difficult to speak of one East Asian culture, because the region's countries all have their unique historical, political, social and economic characteristics. What the countries do share is a common Confucian tradition and “a government paternalistic ethic toward society” (Broadbent et al. 2006: 13). According to Sivin and Ledyard, China, Japan, Korea and Vietnam all share a history where the countries' elites were strongly influenced by the bureaucratic Chinese system (Sivin and Ledyard 1994: 23). They also share a path of economic development that – even though at different junctures in time – led to severe environmental degradation, which was followed by citizens' protests and demands for change.

In some classifications, such as by the United Nations (UN), East Asia encompasses not only the People's Republic of China (PRC), the Special Administrative Regions Hong Kong and Macao, Japan, and the Democratic People's Republic of Korea (DPRK) as well as the Republic of Korea (ROK), but also Mongolia (United Nations Statistics Division). Sivin and Ledyard counter that the Mongols are “not [...] essentially East Asian in culture” because the Mongol elite had their own language and forms of governance (Sivin and Ledyard 1994: 23-4) and were thus more removed from Chinese influence than Japan, Korea and Vietnam.

The availability of scientific data restricted the research for this thesis, narrowing it down to exclude those countries on which little data is available about environmental concern among the populace. This thesis draws data from the WVS, which was carried out in Japan, the PRC, the ROK, the Republic of China (ROC), and Hong Kong, but not in all the waves. For several reasons (see 3.1), the fifth wave of the WVS was chosen as the database for this thesis. The fifth wave was carried out in China, Japan, the Republic of Korea, Taiwan and Hong Kong. However, in Hong Kong the questionnaire omitted many of the questions that are relevant for this thesis, which is the reason why it is not included here. Therefore, for the purpose of this paper, East Asia includes the PRC (henceforth China), Japan, the ROK (henceforth Korea), and the ROC (henceforth Taiwan).

2.2 Concepts

There are various explanations for the existence of different levels of environmental concern in individuals. They range from demographic and institutional factors to value orientations, and combinations thereof. Early research established that young urban females with a high education and relatively high income generally show more environmental concern than those without these features (Van Liere and Dunlap 1980; Hunter, Hatch and Johnson 2004). More recent studies focus on individual beliefs and values that form the basis for people's worldviews and everyday behavior. Accordingly, liberals with postmaterial values would be more concerned about the environment (Inglehart 1990). Another view holds that a new environmental paradigm has emerged and is replacing the formerly predominant worldview which focused on economic growth, exploitation of natural resources and faith in future prosperity (Dunlap et al. 2000; Dunlap 2008). In order to examine what factors influence concern for the environment in East Asian populaces, some of these different concepts are elaborated on in this section.

2.2.1 Five Hypotheses

Many studies focus on the supposed links between environmental concern and sociodemographic factors. Accordingly age, gender, residence, social class and political views are believed to influence the degree of concern for the environment. It is argued that these factors determine the amount of money, time and skills people have, all of which are needed to share the costs of environmental protection (Liu et al. 2010: 1002-3). The assumed relationship between each of these sociodemographic factors and concern for the environment is explained below. Van Liere and Dunlap (1980) describe five hypotheses and test them based on an exegesis of available studies.

The Age Hypothesis:

According to the age hypothesis, young people show more concern about the environment than older people. This claim was supported amongst others by Van Liere and Dunlap, whose review claimed that survey findings did indeed show a negative correlation between age and environmental concern (Van Liere and Dunlap 1980: 182-3). It is argued that young people are less integrated into the social order, and therefore do not perceive environmental protection as a threat to economic interests and the status quo, as more integrated, older

people might (see Van Liere and Dunlap 1980: 183; Olli, Grendstad and Wollebaek 2001: 184). Therefore it seems a given that young people would rather support environmentalism than old people, who are more embedded in the social fabric of society. This explanation is called the age-effect. Age-effect refers to the process of aging, and the change in value orientation that this process entails. This value change is related to an individual's changing role in society. People may have more material and social capital as they grow older and the question is whether they are more likely to use it to maintain economic prosperity or for environmental protection. The age-effect is also the basis for the argument that youths have more time to dedicate to environmental deeds than older people (see Liu et al. 2010: 1002). However, this argument can also be turned around, as older people (i.e. in their retirement) may have more time on their hands for environmentally friendly behaviors (Olli, Grendstad and Wollebaek 2001: 184).

Another explanation why young people would be more environmentally concerned than their elders is cohort differences. A birth cohort, or simply a cohort, refers to people who were all born in the same period of time, i.e. the 1980s. These people are considered to have made similar experiences that exclude people born in other cohorts. Differences between cohorts are explained by the different experiences they made (see Van Liere and Dunlap 1980: 183; Lowry 2009). Environmentalism and issues of ecological degradation started taking center stage in the 1960s to 1980s. Consequently, people who were in their teens and twenties at that time experienced the environmental debate in ways people before had not (see Franzen and Meyer 2010: 222). It is believed that the worldviews of entire generations are influenced by their collective experiences, so young people who were constantly reminded of the dire state of the environment would have built their beliefs and attitudes on these experiences (Van Liere and Dunlap 1980: 183). Yet Fransson and Gärling argue that this could also go in the opposite direction, as in the 1980s older individuals could have changed their views (Fransson and Gärling 1999: 372). It is possible that despite their age they were similarly affected by the ongoing environmental debate, or that environmentalism is just generally on the rise.

Apart from the age-effect and the cohort-effect, the period-effect is also said to play a role in environmentalism (Lowry 2009: 111), although it is considered a weaker factor than the first two effects (Dietz, Stern and Guagnano 1998: 452). In summary, an elderly person might show high concern for the environment due to three different reasons. As people get older, they are more likely to worry about physical health than young people, as they become more aware of their own mortality. This would mean concern is an effect of age. Concern could also be an effect of birth cohort, as people might show high environmental concern because they grew up in a historical period of high environmental awareness. Thirdly, concern could

be a period effect, meaning that currently (while a person is young or elderly) there is a trend towards environmental consciousness, and therefore any negative age-concern correlations might not be universal. However cohorts are also culturally localized so effects may differ across different East Asian sample groups.

The Gender Hypothesis:

The gender hypothesis assumes that concern for the environment is different according to the gender of the individual in question. It is controversial whether gender actually has any influence on environmental concern. A large number of results from studies are ambiguous and do not lend support to the claim that gender determines a pro-environmentalist attitude. Then again some studies (i.e. Deng, Walker and Swinnerton 2006) found that only gender was related to environmental values, while age, education or income were not.

There are several papers which claim that women show higher concern for the environment than men (i.e. Davidson and Freudenburg 1996; Dietz, Stern and Guagnano 1998; Hunter, Hatch and Johnson 2004). Explanations for this claim focus primarily on socialization. While women are traditionally socialized to become mothers and care for others, men are reared to become competitive providers. Gelissen draws a link from these different socialization styles to an attitude toward the environment: women would, as a result of their traditional upbringing, be protective of the natural world, while men would be more likely to try exploiting the environment for their economic benefit (Gelissen 2007: 399). Another explanation is that women tend to have stronger biospheric-altruistic values than men (Stern and Dietz 1994: 73-74). As will be explained in section 2.2.2, this means that they assess environmental problems based on the consequences these problems will have on the biosphere. The biosphere includes whole ecosystems, as well as other people and oneself.

Yet other studies show that males are more politically active and therefore also more likely to be concerned about the environment, as local and global ecological problems are increasingly often featured in everyday politics. Furthermore, knowledge about environmental issues has been found to positively affect environmentalism, and men are supposedly more interested in technical details than women (see Davidson and Freudenburg 1996: 317).

Some studies distinguish between the public and the private – corresponding to male and female – with respect to pro-environmental behavior. Olli, Grendstad and Wollebaek point to two studies that showed women were more pro-environmentally active in the private sphere, while men behaved more environmentally concerned in public (Olli, Grendstad and Wollebaek 2001: 184). Judging from these arguments, it seems that it is not gender per se that influences differences in environmental concern, but rather external factors such as socialization and occupation.

The Residence Hypothesis:

According to the residence hypothesis, rural residents are less likely to be concerned about the environment than urban ones. The findings of several sources agree with this hypothesis (i.e. Tremblay and Dunlap 1978; Dietz, Stern and Guagnano 1998; Harris 2006). A number of reasons speak for it. In contrast to urban residents, people living in rural regions typically view the environment as a set of resources to be used and exploited (Tremblay and Dunlap 1978: 476-7). This argument focuses on the occupation of people and supposes that rural citizens are more likely to be farmers and use nature in an extractive way. Because they have to rely on the natural environment for their work, they would show less concern for environmental quality. But rural residents who do not have extractive jobs would also assume such a worldview because of “a shared rural culture and shared beliefs, norms, and values” (Tremblay and Dunlap 1978: 477). Van Liere and Dunlap list another reason that speaks for the residence hypothesis. Small towns would focus on economic growth rather than environmental protection in order to survive (Van Liere and Dunlap 1980: 185).

Moreover – and this argument is used by many scholars – a link seems to exist between “environmental vulnerability” and individual concern for the environment (Running 2012: 4). People who are exposed to environmental threats are found to be more aware of ecological problems and therefore more pro-environmental. Since urban areas are more prone to environmental degradation than rural sites, urbanites are believed to be more concerned than rural residents because they experience degradation first-hand (Tremblay and Dunlap 1978: 475-6). The argument that increased exposure to degradation leads to increased environmental concern is supported by Takács-Sánta's literature review, where he lists factors which impede the rise of environmental concern. Among these are “Geographical Distance,” as well as “The Distancing Effect of Information Technologies,” which both limit the direct exposure to environmental problems (Takács-Sánta 2007: 30). But, as so often, different studies found different results (see Running 2012: 4), so the actual impact of exposure to environmental hazards on environmental concern is difficult to generalize.

The Political Hypothesis:

The political hypothesis claims that people with liberal and democratic views tend to be more environmentally concerned than conservatives (Van Liere and Dunlap 1980: 185). However, this hypothesis was made with the United States (US) in mind. Nevertheless, other scholars have explored the impact of political ideology on concern for the environment, and found that people with liberal and egalitarian views had the highest pro-environmental attitudes (Olli, Grendstad and Wollebaek 2001: 186; see Running 2012: 7-8). Yet Running remarks that

while individual political views are strongly linked to pro-environmental attitudes in developed nations, they are only weakly correlated in developing and transitioning countries (Running 2012: 13). In developing countries, democracy is often not or not fully developed. Moreover, being liberal or conservative does not necessarily mean the same thing in Western countries and in other regions of the world. As Aoyagi-Usui, Vinken and Kuribayashi point out, concern for the environment is more embedded in Asian traditional culture than in the West. They claim that an environmental worldview is linked with traditional values such as filial piety and obedience (Aoyagi-Usui, Vinken and Kuribayashi 2003: 30). In a similar vein, Kern finds it little surprising that East Asians who show high levels of environmental concern are not necessarily liberal in their political worldview, but often have more conservative politics (Kern 2010: 877).

The Social Class Hypothesis:

The link between social class and a pro-environmental attitude is disputed. Van Liere and Dunlap (1980) postulate a positive relationship between social class and environmental concern. In their conception, the factors that make up the construct “social class” include education and income. While the positive link between education and environmental concern has been shown in many studies, findings on the relationship between income and concern are less clear (see Shen and Saijo 2008: 43). In terms of costs necessary to pay for environmental protection, higher social classes are seen to possess more skills and capital because of their education and higher income than the lower classes, which would make them more prone to engage in pro-environmental deeds (Liu et al. 2010: 1002). Another line of argument claims that people belonging to a higher social class have the freedom to aspire to higher goals than simply fulfilling basic needs such as food and economic security. In this respect, environmental concern is considered a luxury that only the well-off may pursue (Van Liere and Dunlap 1980: 183). This argument is in line with Inglehart's (1990, 1995) theory of postmaterialism, which will be explained in depth in section 2.2.4.

Another potential explanation for higher environmental concern among higher social classes is the supposition that, at least in America, the upper and middle classes are politically and socially most active (Van Liere and Dunlap 1980: 184). However, a strong counter-argument to these explanations is that the lower classes are typically more exposed to degradation because they often have to live in areas with severe environmental degradation. According to the degradation hypothesis, this exposure might raise the concern of those people.

If we are to believe these five hypotheses, then young, well-educated, liberal urbanites could be considered to inhabit the upper end of the environmental concern scale. Older, little educated, conservative rural habitants, on the other hand, would hardly be concerned for the environment at all. Van Liere and Dunlap concluded that actually only the age, education and political ideology hypotheses showed consistent correlations with environmental concern (Van Liere and Dunlap 1980: 189-92). Many studies have tried to prove or disprove the relationships between these five factors and concern for the environment. Although some factors have been found to be widely valid in predicting environmental concern, studies produce differing findings (see Fransson and Gärling 1999: 372). One reason for these differences lies in the measuring and sampling criteria that are employed. Furthermore, findings vary according to the geographical area of research. Feng and Reisner take note that while the links between these sociodemographic factors and pro-environmental activities are fairly consistent in the US, they are less so in other regions of the world (Feng and Reisner 2011: 434). Moreover, environmental concern is increasingly found to transcend sociodemographic boundaries. Because of this, many studies focus instead on what Wong and Wan (2011) call “individual determinants” to account for environmental concern. These determinants refer to people's values, beliefs and worldviews. Three different such theories are explained below.

2.2.2 The Values-Beliefs-Norms Theory

The values-beliefs-norms (VBN) theory centers on environmental concern and behavior. It was originally established to account for support of social movements. However, it has also been treated as a value basis for environmental concern (i.e. Milfont, Duckitt and Cameron 2006). The VBN theory combines Schwartz's (1977) norm-activation theory, value theory, and the concept of the New Environmental/Ecological Paradigm (NEP). The NEP will be explained in detail in section 2.2.3.

According to the VBN theory, personal *values* form the basis for how people view the environment. This influences how they *believe* environmental change will affect themselves and objects they value, and also how they believe they may be able to prevent such consequences through their personal actions. These beliefs then have an impact on people's *norms*, carving the way they take action (Stern et al. 1999: 83; Dietz, Fitzgerald and Shwom 2005: 356). Values in this sense refer to fundamental principles; a person's beliefs and actions are all linked to these basic values (Stern and Dietz 1994: 67). Environmental attitudes are thus shaped with respect to how individuals expect environmental problems to affect people

or things that they care for. These expected consequences are beliefs, and serve as a bridge between values and attitudes. Such attitudes are basically what is referred to as “norms” in the VBN theory. Since values form the basis for beliefs and norms, they are stabler than attitudes, because they are not subject to situations and objects like attitudes are (see Deng, Walker and Swinnerton 2006: 42).

Building on Schwartz's (1977, 1992) work, the George Mason University group around Stern, Dietz and colleagues developed a classification of the principal values that form the basis of environmental concern. Schwartz's (1977) theory links personal moral norms to environmentally friendly behavior. Central parts in this process are the awareness of consequences that environmental conditions have on their valued objects and the self-ascribed responsibility to lessen these threats (Stern et al. 1999: 85). People who realize what environmental problems may lead to and who believe that they have some power to alleviate these outcomes are thus believed to act pro-environmental. In their endeavor to classify the basic values underlying environmentalism, Stern et al. (1999) used Schwartz's (1992) typology. Schwartz had found four value clusters that incorporate all human values, as he claimed. These clusters are “self-enhancement” versus “self-transcendence” and “openness to change” versus “traditionalism.” Based on this, Stern and Dietz found that there are three types of “valued objects,” namely the self, other people and nonhuman objects (Stern and Dietz 1994: 66). For clarification, this means that either the individual in question, or other people, or the natural world, are at the center of an individual's values. Correspondingly, according to the VBN theory the three principal values that form the basis of environmental concern are egoistic, altruistic and biospheric values. In some sources, the names for these basic orientations differ, with self-interest replacing egoistic value (i.e. Dietz, Fitzgerald and Shwom 2005: 344) and social-altruistic value instead of simply altruistic value, however the overall concept is the same.

Egoism:

This value is related to the rational actor model, according to which people are driven by self-interest. Consequently, some people are concerned about the environment because they fear that an ecological crisis or an environmental problem would threaten their own health or safety. They judge environmental issues on a personal basis. People with strong egoistic values oppose environmental protection if they think the sacrifices they have to make are too great or if they cannot relate environmental problems to their personal life (Stern and Dietz 1994: 70). Only if environmental problems threaten their own lifestyle, health or future do they become concerned or pro-environmentally active. Authority, influence and wealth are

examples of egoistic values.

(Social) Altruism:

This is the underlying value that makes people concerned about fellow humans. People are concerned because they fear that environmental problems might harm many people or people close to them. Such people act out of compassion for others, because they believe they are at least in part responsible for the consequences to others (Stern and Dietz 1994: 70). Altruistic values are thus in play when people use consequences for any human group as the basis for their considerations. So people with altruistic values are concerned i.e. about their family, people in their community or their country, or their future descendants.

Biospheric Altruism:

This value orientation is similar to the one before, except that not only humans are seen to be valuable, but other species and ecosystems as well. Therefore, any consequences for the entire biosphere form the basis for judging environmental issues. People with strong biospheric altruistic values emphasize environmental protection, unity with nature and social justice (Aoyagi-Usui, Vinken and Kuribayashi 2003: 26). Concern for the environment is not the product of compassion for others' welfare or regard for one's own well-being. Instead, all living organisms are seen as having intrinsic value. Animals, but also plants are considered valued objects here.

This value orientation is different from the other two in that it is ecocentric and thus values the environment for its own sake. The egoistic and social altruistic values on the other hand are anthropocentric, so people are at the center of all considerations. Egoists and social altruists consider the natural world and its non-human inhabitants as “instrumental” in achieving whatever aims (Dietz, Fitzgerald and Shwom 2005: 344). Moreover, the biospheric value orientation is related to the NEP (see 2.2.3).

This tripartite value classification has been researched and tested by other scholars (see Milfont, Duckitt and Cameron 2006: 747), and was found to be useful in determining underlying factors for environmental concern. Research of the group around Stern and Dietz showed that people with altruistic values were more likely to report that they were willing to take action to protect the environment. Moreover, egoistic values were found to correlate negatively with pro-environmental norms (Stern 2000: 414). A supporting argument for the claim that people with altruistic values tend to have higher environmental concern relates to social movements. Social movements demand from its members to behave according to the principles that the movement stands for. In many cases, this involves people having to go out

of their way, thus acting not out of self-interest but for altruistic reasons, because their demands are aimed at benefiting a larger group of people.

So according to the VBN theory, either of these three value orientations can be responsible for environmental concern. Stern and Dietz believe that these values are shaped in people during their socialization, and that as they grow up, it becomes increasingly difficult to change them (Stern and Dietz 1994: 67). Such value orientations are not mutually exclusive, therefore several different views may be present in an individual. Moreover, the degree of those values may be different in different cultures (ibid.). The three determinants are considered to be “the most stable determinants of environmentalism across the life course” and therefore very difficult to change on a whim (Dietz, Fitzgerald and Shwom 2005: 356). But a long term value change that happens across generations may be instrumental for global change (Stern 1992: 281). Either way, the three value orientations are believed to be indirectly responsible for environmental behavior and therefore important.

Inevitably, the question arises how to measure these values. The VBN theory draws on both the Schwartz Value Survey and the NEP scale. The Schwartz Value Survey has been mentioned above and several of its items are included in the WVS, from which this thesis draws its data. The NEP scale is explained below.

2.2.3 The New Environmental/Ecological Paradigm

Some scholars maintain that an environmental consciousness is the feature of an ecological worldview, or a New Environmental/Ecological Paradigm (NEP). The NEP scale, which was invented in 1978 by Dunlap and Van Liere, is still often used for measuring environmental concern. It accounts for differences in environmental concern by claiming that there are two fundamentally different paradigms at play. Accordingly, people endorse either the Dominant Social Paradigm (DSP) or the NEP. It is believed that as people became more affluent and their societies surpassed the industrial stage, a new paradigm emerged, and more and more people shifted their worldview to an ecological focus (Pierce et al. 1987: 56). People who are most committed to the DSP would therefore be the least concerned about environmental quality. So instead of being subject to individual or national predisposition, environmentalism is seen as a new paradigm. In the DSP, economic growth, progress, faith in science and technology, and material abundance are the focus. The NEP, on the other hand, means an ecological worldview, where anthropocentrism is replaced by ecocentrism. So instead of man, the biosphere takes center stage and forms the basis for all considerations. The NEP is closely

tied to postindustrialism, as the old values of the DSP go hand in hand with industrialization. Environmentalists blame environmental exploitation on this belief system of the Western democracies, because of the DSP's focus on exploiting and degrading the natural environment (Pierce et al. 1987: 56; Mohai, Simões and Brechin 2010: 781).

Dunlap and Van Liere set out in the late 1970s to test respondents' agreement with different dimensions of the DSP and measure features of this emerging environmental worldview (see Dunlap and Jones 2002: 509). They developed the New Environmental Paradigm scale, which measured in how far respondents favored an ecological worldview. It questioned the DSP in which it was taken as a given that humans were superior to nature, amongst other things. The hypothesis that the DSP was negatively correlated with a new environmental paradigm was found to be true. The items Dunlap and Van Liere established to test their hypothesis revolved around three major factors: balance of nature, limits to growth, and anti-anthropocentrism. The scale measured whether or not respondents acknowledged the existence of limits to growth, that ecosystems are in a sensitive equilibrium, and that nature has value beyond being used by people.

The NEP scale was revised in 1990 for a number of reasons (see Dunlap et al. 2000: 438; Dunlap 2008: 9). The revision brought two main changes with it. First, the scale was renamed the New *Ecological* Paradigm scale. This move is explained by arguing that “ecological” is a broader term that includes global problems, as opposed to “environmental,” which means more specific localized problems (Dunlap et al. 2000: 431-2). Second, two dimensions were added to the existing three. Respondents were now asked in addition whether they believed in the possibility of an ecocrisis, and whether they agreed or disagreed with the idea that natural constraints do not apply to the human species. Overall 15 items were formulated to establish whether respondents agreed or disagreed with the five core dimensions.

Apart from the dichotomy “ecocentrism” versus “anthropocentrism,” there is another concept that is in line with the NEP, which is mentioned here because it is relevant for this analysis. Barrett, Kuroda and Miyamoto draw a link from the NEP to O’Riordan’s (1976) two ideological perspectives: “ecocentrism” versus “technocentrism.” The ecocentric perspective is focused on environmental quality and low impact technology. It champions man’s responsibility to maintain an ecological equilibrium. The technocentric perspective on the other hand is characterized by a strong belief in technology, rationality and science. Nature is subservient to technology. As Barrett, Kuroda and Miyamoto stress, technocentrism is closely related to the DSP, while ecocentrism is in line with the NEP (Barrett, Kuroda and Miyamoto 2002: 238-9).

The NEP scale thus takes into account not only the consequences environmental problems have on humans, but also on other species and the biosphere (Stern and Dietz 1994: 70-1). Consequently the NEP scale was used to measure beliefs by Stern and Dietz (1994) in their VBN theory. And, as it turns out, people who agree with the pro-NEP items tend to be young, well-educated, and liberal (Dunlap et al. 2000: 429-30). Moreover, Dunlap et al. also noted a slight positive correlation between endorsement of the NEP and past residence being urban (Dunlap et al. 2000: 436). In addition, countries that emphasize collectivism and harmony and which support international environmental protection measures have been found to score higher on the NEP scale than nations which value conservatism and materialism (see Dunlap 2008: 11).

The different concepts seemingly all come to similar conclusions or support each other's claims. These correlations are a reason why this thesis aims to bring together the different concepts in order to analyze environmental concern in East Asia. The NEP scale's validity in areas that were not developed and Western has been questioned, but studies in Chinese, Japanese and Korean societies have shown internal consistency (see Dunlap 2008: 12). Stalley and Yang (2006) and Mohai, Simões and Brechin (2010), for instance, relied on the NEP scale to determine Beijing respondents' environmentalist attitudes. Pierce et al. (1987) used the original NEP scale to compare environmentalism in Japan and in the United States. In this thesis, the NEP scale will not be used directly, but rather WVS questions that explore the issues underlying the NEP and the DSP.

Apart from the concepts elaborated on above, there is another possible explanation for the formation of environmental concern. Stern (1992) mentions that the transformation from materialist to postmaterialist values is a potential driver for environmental concern. The postmaterialism theory is frequently mentioned and criticized in the literature on environmentalism, therefore it is explained below.

2.2.4 The Postmaterialism Theory

Inglehart, a political scientist, hypothesized that environmental concern stems from materialist and postmaterialist values. According to him, environmentalism has emerged with the development of societies to postindustrialism (Inglehart 1990, 1995). He argues that people's goals have a hierarchical order, which changes through external developments such as industrialization. From the outset, societies are focused on survival and material provisions. But as these societies become more prosperous, people's material needs are largely fulfilled.

Their survival being secured, they become free to strive to fulfill non-material needs. The change from industrialism to postindustrialism is believed to change people's values in the long run. Specifically, basic material needs would be at least partly replaced by what Maslow (1970) calls higher order needs, such as aesthetic needs. Lasting economic growth, rising education levels, political stability and widespread material prosperity are said to produce a gradual transformation of materialist to postmaterialist values in people (Inglehart 1990). Crucially, environmental movements would be a feature of this trend towards postmaterialism. So according to Inglehart's theory, the drivers for environmental concern are of an aesthetic nature. Concern is not born out of any indispensable need; it transcends material necessities.

Based on this central idea, Inglehart claimed that societies can be classified into largely materialist and largely postmaterialist ones. He argued that this classification would hold true at the individual as well as the national level. Accordingly, people and societies with materialist values are concerned primarily with their physical security (food and shelter). An important characteristic of Inglehart's theory is that younger people who have been born into postindustrial societies would be more environmentally concerned, because they never had to worry about survival and basic material needs. This “generational replacement” would lead to a long-term value change, and an increase in postmaterialists vis-à-vis materialists (see Inglehart 1990: 423). Consequently, goals other than survival develop, and there is an increasing focus on individualism, innovation, and self-expression (Inglehart and Welzel 2010: 553). In contrast to this, conformity and economic security are features of the materialist value system that is focused on survival.

Postmaterialism is linked to the preference of socially liberal ideas. Therefore, the process that makes postmaterialism emerge would also produce a political shift towards libertarian values, such as tolerance, participation, and quality of life (Inglehart and Welzel 2010: 553). Inglehart and Welzel assert that societies that have gone through industrialization all share certain features such as a shift from traditional values to secular-rational ones, which include a preference for democracy and less focus on religion (Inglehart and Welzel 2010: 552-5). Liberal attitudes, according to this theory, essentially depend on economic growth and material prosperity. Similarly to Inglehart's theory, Flanagan and Lee claim that there is a value change from authoritarian to libertarian values happening in advanced industrial societies. The goal of this change is self-actualization, which is inhibited by the hierarchy, closed belief systems and conformity of authoritarian values, so they argue (Flanagan and Lee 2000: 631). Libertarian values, on the other hand, are characterized by freedom in the social, psychological and physical domain. This means that openness, independence and

individualism are valued, which lets people realize their potential (ibid. 632-4).

Inglehart's theory is affluence-based; give a society material prosperity and they will develop postmaterial values, including concern for the environment. Inglehart's theory shows similarities to the social class hypothesis explained above: both claim that the classes with a higher income tend to be more concerned about the environment, either because this concern is seen as something that transcends material goods or because financial capital enables environmental protection. So basically a society would emphasize values on the basis of how affluent in material resources that society is (Inglehart 1990). Personal as well as national affluence would be strongly linked to concern for environmental quality.

Apart from studies supporting the postmaterialism theory (i.e. Diekmann and Franzen 1999; Flanagan and Lee 2000), there are some factors which seem to prove the assumption that environmental concern is a monopoly of the well-off. Givens and Jorgenson point to several such factors: the existence of political parties with environmental agendas and environmental organizations in many affluent countries, the prevalence of economic development aid to less affluent countries instead of environmental protection assistance, and the tendency of less affluent nations to choose development policies over environmental protection policies (Givens and Jorgenson 2011: 75).

To test his theory, Inglehart used data from the WVS, which he also directs. One question asks respondents to rank four answers by importance: maintaining order in the nation, fighting rising prices, giving people more say, and protecting freedom of speech. The first two are materialist items, and the latter two postmaterialist ones. Based on their replies, respondents are categorized as materialist or postmaterialist. People who choose one material and one postmaterial answer before the others, are categorized in the 4-item postmaterialist index as "mixed." The postmaterialist items show that postmaterialism is also strongly linked to a preference for democracy.

But when Inglehart tried to prove his theory using data from the WVS, the findings supported only parts of his hypothesis. Citizens of relatively well-off countries did tend to favor postmaterialist items over materialist ones (Inglehart 1995). Yet the differences in environmental concern between countries with national low or middle income and advanced industrial countries were found to be nonsignificant (Brehin and Kempton 1994, quoted in Dietz, Fitzgerald and Shwom 2005: 360). Moreover, research also showed that citizens in some industrializing countries were highly concerned about the environment, sometimes even more so than in postindustrial countries (see Dunlap, Gallup and Gallup 1993; Inglehart 1995; Dunlap and York 2008). This one point is the most salient criticism of Inglehart's work.

Several studies (i.e. Dunlap, Gallup and Gallup 1993) point out that environmental concern is not an exclusive feature of affluent nations, but that it has spread around the whole globe. This argument is supported by a number of points. One crucial point is that grassroots environmentalism is booming in less affluent countries, with environmental organizations on the rise. Findings from the Health of the Planet (HOP) survey (Dunlap, Gallup and Gallup, 1993) support this criticism of Inglehart's theory. Apart from growing environmentalism in less affluent nations, environmentalism is also not restricted to classes (Givens and Jorgenson 2011: 75). In addition, Givens and Jorgenson mention “global political environmentalism” and “transnational environmental movements” as features of the current global situation (ibid.), which both go against Inglehart's notion that environmental concern is an exclusive feature of affluent societies and people. Moreover, exposure to and social protest against local degradation and the propagation of environmental values by the media are forces that drive environmentalism in poorer countries (see Kim and Kim 2010: 20-1).

Inglehart consequently adjusted his hypothesis, claiming that the explanation for environmental concern is two-fold. He claims that while the postmaterialism theory would apply in postindustrial nations, in less affluent countries environmental concern would stem from direct confrontation with ecological problems, therefore being objectively driven. In post-industrial nations the adoption of pro-environmental attitudes would still be a byproduct of the shift from materialist to postmaterialist values, thus making environmental concern subjective (Inglehart 1995: 57). Because of the terminology Inglehart uses, this theory is sometimes called the “objective problems and subjective values” (OPSV) theory. Inglehart basically argues that depending on the affluence of the country in question, environmental concern stems either from affluence and the subsequent development of postmaterialist values, or from exposure to degradation. The objective problems argument has been used by other scholars and is also called “degradation hypothesis.” It shares some features with the residence hypothesis mentioned in section 2.2.1, such as that exposure to degradation leads to a heightened awareness of environmental problems, thus increasing the concern of exposed individuals.

The OPSV theory was supported by some studies (i.e. Kemmelmeier, Król and Kim 2002), but several scholars were critical of it (see Gelissen 2007: 393-4). They all prove that environmental concern can be negatively linked with affluence, claiming that environmental concern does not stem from wealth or postmaterialist values, but is rather a global phenomenon. Another problem with Inglehart's two-fold explanation is that affluent nations are also exposed to direct objective environmental problems, and environmental concern might be present in members of poorer nations without them being exposed to such problems

(Givens and Jorgenson 2011: 76). It must be remembered, though, that many affluent countries tend to export their environmental problems to poorer ones by outsourcing their polluting industries. This fact may support the claim that the residents of less affluent nations would develop environmental concern because they are directly exposed to threats to their health and well-being.

There is another important point of criticism that focuses on the methodological approach of Inglehart and some who followed his method (i.e. Kemmelmeier, Król and Kim 2002; Diekmann and Franzen 1999). It is criticized that using willingness-to-pay as the criterion on which environmental concern is based is distorting, because it favors positive answers from more affluent respondents. While poorer respondents may give negative answers to these questions, they might still be concerned about the environment, but show it in ways that do not include paying actual money (see Givens and Jorgenson 2011: 78). Contrary to this, Gelissen found that publics of less affluent nations actually showed higher willingness-to-pay than affluent publics (Gelissen 2007: 410). Similarly, Dunlap and York undertook the task of comparing the findings of three waves of the WVS with those of Gallup's 1992 HOP Survey. They found in their study that “residents of poor nations are no less likely than their counterparts in wealthy nations to support environmental protection, even when doing so entails personal cost” (Dunlap and York 2008: 545). The authors criticize the measures of environmental concern in the 1995-1998 WVS for being biased in favor of more affluent respondents. Keeping these criticisms in mind, this thesis will draw on parts of Inglehart's theory.

2.3 Synthesis

Judging from the literature review and the sketching of the most prevalent concepts about environmentalism, there is a multitude of ways of conceptualizing and assessing environmental concern. While earlier scholarly work was focused on finding a link between sociodemographic factors and concern for the environment, values later came into the limelight. In order to create the most holistic picture possible of East Asians' drivers for environmental concern, this paper examines a mix of factors found in the concepts above. Choosing which factors to use was also hinged upon whether or not they were available in the data set that is used for this study.

The four theories explained above show that there is not one single factor that reliably predicts environmental concern. Sociodemographic factors show differing results when linked to environmental attitudes or behavior. Values on the other hand seem to be more consistently

linked to concern for the environment, as the VBN and postmaterialism theories claim. For the purpose of this paper, those factors which can be measured using WVS data are chosen, and their relationship to environmental concern is explored in the analysis. First of all, there are the sociodemographic factors age, gender, education level, income and subjective social class. As for the residence hypothesis, the WVS does not ask respondents whether they live in urban or rural areas. But seeing as the main reason why urbanites would be more concerned than rural residents is exposure to environmental problems, testing the degradation hypothesis will suffice for this analysis. Apart from these socio-demographic factors, political outlook as a factor was mentioned in the Five Hypotheses. Simply transferring the concepts liberalism versus conservatism to East Asian societies is difficult and its validity questionable. As Asian traditional culture involves a strong focus on obedience and piety, authoritarianism will be one of the factors that are examined. This will show how such traditional values are linked to environmental concern. As an opposing factor, libertarianism⁶ was chosen to see in how far tolerance and participation influence concern for the environment.

The VBN theory, as explained, emphasizes altruism and egoism as two value orientations that influence environmental concern. Therefore, both these factors will be examined. As an aspect of the NEP, faith in science and technology will be linked with environmental concern. Finally, postmaterialism measured with Inglehart's index from the WVS (WVS question Y001) will also be linked to such concern to see what tendencies East Asians show in this respect.

2.4 Expected Findings

The main question of this thesis is in how far the factors from the concepts above influence environmental concern in East Asia. It is not a given that a consistent relationship in Western countries' populaces automatically is similar in any other region in the world. So what results are expected from this analysis?

2.4.1 Age

With respect to age, more young East Asians are expected to show environmental concern than older ones. Reasons for expecting such a link would be the young people's freedom, both in terms of time and a comparatively low standard of living. Moreover, the younger generation is growing up in an age of more widespread environmentalism (in media and

⁶ Libertarianism is different from liberalism in that it values freedom above all other things and favors a restriction of government.

education) than the previous ones, which could have resulted in a pro-environmental worldview among younger East Asians. In the adult age group, career and childrearing are expected to become important. While childrearing could have both positive and negative implications for environmental concern, focusing on one's career and competitiveness would likely bring only negative implications for concern. Job pressures and wanting to protect the status quo is likely to continue in the middle-aged group, which means low concern among this age group. For elderly East Asians however, a lot of time on their hands and fixed resources might also result in high concern for the environment. So with respect to age, I expect to find young East Asians and maybe some of the elderly ones to show more environmental concern than the adult and middle-aged groups.

2.4.2 Gender

The link between gender and a pro-environmental attitude is difficult to gauge. With respect to East Asians, it is expected that more women than men show environmental concern. Reasons for this are that men are likely to be very competitive at the workplace and focus on economic growth, and providing for their families. Women on the other hand are expected to be more likely environmentally concerned because of their capacity as mothers and nurturers.

2.4.3 Exposure to Pollution

Exposure to degradation is expected to be positively linked to environmental concern. Having to experience a polluted environment in their daily life is expected to increase East Asians' likelihood of being concerned about environmental quality, foremost for health reasons. The phenomenon that many people across the whole region wear face masks in their daily life speaks for this claim.

2.4.4 Social Class

Environmental concern is expected to rise with social class. A high education level as well as more income and a higher subjective social class are expected to favor environmental concern, as the higher classes are believed to have more means and time to dedicate to environmental protection. On the other hand, it could also be possible that some of the lower class respondents show concern because they lack the means to escape environmental pollution.

2.4.5 Postmaterialism

As an aesthetic rather than a material need, concern for environmental quality is a characteristic of people with postmaterialist values, as Inglehart argues (Inglehart 1990, 1995). Therefore, we expect that fewer East Asian respondents with materialist values show concern for the environment than postmaterialists.

2.4.6 Libertarianism and Authoritarianism

The influence of libertarian and authoritarian values on environmental concern of East Asians is difficult to predict. Both could go in either direction. Libertarian values could positively influence environmental concern because a poor environment is detrimental for all people, and the freedom of all people is important to libertarians. On the other hand, libertarians might value their freedom to act as they please above other things, which might result in a lack of environmental concern. East Asian authoritarians might show concern if they are forced to do so. They might also be ambivalent about environmental quality because they fear political and systematic change.

2.4.7 Altruism and Egoism

Altruism and egoism are expected to influence environmental concern as postulated in the VBN theory (see 2.2.2), namely altruism predicting concern and egoism being negatively related to concern.

2.4.8 Faith in Science

It is expected that many East Asians have faith in science, as the region is renowned for being at the forefront of many technological advances. Faith in science will likely have a negative influence on environmental concern, as argued in the NEP theory, where such faith is linked with the values of the DSP (see 2.2.3). This is expected because people who believe that science and technology can save the planet will likely assign less responsibility to themselves to act pro-environmental.

3 METHOD

3.1 Evaluation Methodology

In this thesis, I am using a self-derived Python script to do higher order cross tabulation on the World Values Survey (WVS) data. Python was chosen because it is a simple programming language that is quick to learn (Computer Science Circles) and there existed library functions that allowed for the translation between the WVS Stata data and a native Python data structure. Using Python allowed for a quick analysis of the WVS data, as logical experiments could be performed easily directly on the data without the need for extensive pre-planning. The script used for this analysis can be found in appendix 1.

The WVS has been mentioned above; it is a worldwide survey that uses standardized measures to determine the values of publics all over the globe. In order to broaden the data pool I first set out to use the combined data from the five waves of the WVS for each country, as this would help form more reliable support for the different hypotheses. However, there has been quite a lot of change in the wording of the WVS questions, and some items that are crucial to this paper have been omitted in some waves or in specific countries. Moreover, the items designed to measure environmental concern have been changed in the fifth wave. In the first four waves, they include a larger number of statements for the respondents to agree or disagree with. The fifth wave cuts these down to four items, which tap into willingness-to-pay, emphasizing environment over economy, and supporting government action to protect the environment. Additionally, six new items were included in the fifth wave; these focus on perceived severity of both local and global environmental problems.

This development was a reason for me to use only data from the fifth wave, as the analysis of the data relied on exactly these items. Moreover, the fifth wave includes data from Taiwan, which apart from that only took part in the third wave. Hong Kong is also included in the fifth wave, but with a very limited questionnaire. Many of the questions relevant to this paper have not been asked Hong Kong respondents. For this reason, data from the Hong Kong questionnaire is not included in the analysis. Apart from the new questions about environmental concern, the fifth wave survey includes ten items that use statements from the Schwartz scale, which the earlier waves did not. Again, these were not included in the Hong Kong survey. One aspect of this thesis is to find out if East Asians tend to show egoistic or altruistic value orientations and how they are related to environmental concern. Some of the Schwartz items will shed light on this question. Finally, the fifth wave survey uses two items that explore in how far respondents show materialist versus postmaterialist tendencies. These

are based on Inglehart's theory (see 2.2.4) and will also help assess East Asians' underlying values.

3.2 Technical Data

The sample sizes for the countries vary, as do their years of survey. The age distribution in the samples that were used in the fifth wave of the WVS are based on the respective countries' census data of the year 2000, except for Taiwan, where it was based on the 2005 Taiwan-Fukien Demographic Fact Book (Official Codebook Taiwan WVS 2006).

Table 1: WVS sample sizes, survey year and age group of respondents by country

	China	Japan	Korea	Taiwan
Sample size*	2015	1096	1200	1227
Year of survey	2007	2005	2005	2006
Age distribution	18-70	18-79	20+	18-85

*These are the sample sizes from the dataset sample in the WVS online analysis tool, which correspond to the ones in the dataset downloaded from the WVS homepage (www.worldvaluessurvey.org). The sample sizes for China, Japan and Taiwan differ slightly in the codebook for the WVS fifth wave.

(Source: 2005-2008 World Values Survey)

In China, the WVS was undertaken by the Research Center for Contemporary China at Beijing University. Face-to-face interviews were carried out from March to May 2007. Chinese respondents were aged 18 to 70 and come from all provinces of mainland China. The Chinese sample for the WVS was chosen through stratified, multi-stage probability proportional to size (PPS)⁷ sampling. Finally, respondents were weighted and post-stratified in terms of age, gender and level of education based on the 2000 Census data (Official Codebook China WVS 2007).

In Japan, the Nippon Research Center, Ltd. sent mail surveys to people sampled from its nationwide omnibus survey panel. These were private persons aged 18 to 79. The sample was picked with the help of stratified multi-stage sampling, with region and city size being the stratification factors in the first stage. Furthermore, gender combined with age-group quotas based on the results of the 2000 census were employed (Official Codebook Japan WVS 2005).

In the case of ROK, the Korean Social Science Data Center interviewed Koreans over 20 years of age face-to-face in 2005. Weighting was done by age, gender and education, based

⁷ PPS sampling is a technique used to improve the quality of a random sample so as not to be biased strictly towards certain geographic regions.

on the 2000 Korean Census data (Official Codebook South Korea WVS 2005).

In Taiwan, the Center for Survey Research at Academia Sinica carried out face-to-face interviews in 2006. Three-stage stratified PPS sampling was used, including township, administrative unit under township, and respondent. Respondents' sample data was weighted by gender, age, area and level of education to be representative of all of Taiwan (Official Codebook Taiwan WVS 2006).

Admittedly, the sample sizes for the four countries are relatively small, especially in the case of China. (The above sample sizes are only the complete, valid interviews, so the target sample sizes were larger.) Still, even a small sample provides some useful information and insight into the views of a small part of the population. Yet even with the stratification and weighting that was done in all four countries to assure representativeness, it is dangerous to make assumptions about a country's whole population based on findings for a small sample. In order not to generalize the results of this analysis, individual opinions of East Asians who I interviewed are used to support and contrast the findings.

3.3 Evaluation of WVS Data

The method of this research is to use WVS data to evaluate environmental concern as related to several other factors previously mentioned. Those responses that are positively associated with the factor that is measured are chosen from a set of survey questions. The question responses that are considered positive occupy a range in many cases, e.g.:

Question V108: I am going to read out a list of environmental problems facing many communities. Please, tell me how serious you consider each one to be here in your own community. Is it very serious, somewhat serious, not very serious or not serious at all? Poor water quality.

Possible answers: 1 Very serious, 2 Somewhat serious, 3 Not very serious, 4 Not serious at all.

(Source: 2005-2008 World Values Survey)

For this case, answers 1 and 2 are considered positive responses because they show the respondent is very or somewhat concerned about the local water quality. Any positive answers for the one question count the same before the weighting (there is no differentiation between strong and some concern). Each question is given a weight of 1. Once all of the questions in a factor have been evaluated, the sum of the positive weights is compared with a

threshold, which is chosen to be usually just slightly more than half of the questions that are used in each factor. So a slightly greater than simple majority is used to determine whether a survey response exhibits each factor. All the factors are listed in detail below.

Here is an example to show how a few sample responses would be combined:

Table 2: Example of counting raw data with a threshold

WVS question number	Raw data of respondent 1	Counting	Raw data of respondent 2	Counting	Raw data of respondent 3	Counting
V105	2	1	3	0	2	1
V106	3	0	4	0	2	1
V107	2	1	2	1	3	0
V104	2	0	2	0	1	1
V108	3	0	4	0	1	1
V109	1	1	2	1	2	1
V110	2	1	3	0	3	0
V111	2	1	3	0	2	1
V112	3	0	3	0	1	1
V113	2	1	2	1	1	1
Overall count		6		3		8

Threshold: 6

(Data derived from 2005-2008 World Values Survey)

In table 2, the raw data answers of three respondents are shown as the number of the answers they gave to ten different questions. (These ten questions make the environmental concern factor, see 3.3.1.) The “Counting” columns show whether their answers met the criteria that would show they exhibit a certain factor (in this case environmental concern). If their answer is counted as 1, it means the respondent exhibits this factor, while answers counted as 0 mean the opposite. Most factors have a threshold to establish whether the respondent exhibits these factors across a number of questions. In this case, the threshold is 6, which means that respondent 1 and respondent 3 exhibit the measured factor, because their overall count is at six or higher.

Each of the following sections will start with a table of the selected WVS questions followed by a description of the rationale for choosing answers and thresholds.

3.3.1 Environmental Concern

Table 3: WVS questions and accepted answers for environmental concern factor

Data set internal question number	WVS question number	WVS question	Shortened question title	Accepted answer codes in numbers
147	V105	Would give part of my income for the environment	Give part of income	1 (“strongly agree”), 2 (“agree”)
148	V106	I would agree to an increase in taxes if the extra money were used to prevent environmental pollution	Increase in taxes	1 (“strongly agree”), 2 (“agree”)
149	V107	The government should reduce environmental pollution, but it should not cost me any money	Government reduce pollution for free	1 (“strongly agree”), 2 (“agree”)
146	V104	Which statement comes closer to your own point of view: A. Protecting the environment should be given priority, even if it causes slower economic growth and some loss of jobs. B. Economic growth and creating jobs should be the top priority, even if the environment suffers to some extent	Protecting environment vs. economic growth	1 (“protecting environment”)
150	V108	Environmental problems in your community: Poor water quality	Poor local water quality	1 (“very serious”), 2 (“somewhat serious”)
151	V109	Environmental problems in your community: Poor air quality	Poor local air quality	1 (“very serious”), 2 (“somewhat serious”)
152	V110	Environmental problems in your community: Poor sewage and sanitation	Poor local sewage and sanitation	1 (“very serious”), 2 (“somewhat serious”)
153	V111	Environmental problems in the world: Global warming or the greenhouse effect	Global warming	1 (“very serious”), 2 (“somewhat serious”)
154	V112	Environmental problems in the world: Loss of plant or animal species or biodiversity	Global loss of species	1 (“very serious”), 2 (“somewhat serious”)
155	V113	Environmental problems in the world: Pollution of rivers, lakes and oceans	Global pollution	1 (“very serious”), 2 (“somewhat serious”)
				Threshold: 6

(Data derived from 2005-2008 World Values Survey)

Environmental concern is evaluated by combining the ten WVS items tapping environmental attitudes. The first two items assess respondents' willingness-to-pay for environmental protection. Answers range from “strongly agree” to “strongly disagree.” One item with the same answer structure asks if respondents believe the government should reduce environmental pollution. The last six items ask for respondents' perceived severity of environmental problems. These six items have four possible answers each, ranging from

“very serious” to “not serious at all.” A preference for the positive answers in all the items named shows that the respondent shows some environmental concern. The remaining item (V104) asks respondents to choose between protecting the environment and focusing on economic growth. Here, people choosing the environment are the ones who show some concern for the environment. Any answers that show environmental concern are assigned a weight of 1. In order to establish who of the respondents show concern for the environment across the ten items, a threshold of 6 is established. Therefore, if a respondent answers at least six out of these ten items positively, then for the purpose of this study they are considered to be concerned for the environment.

It has been criticized that in earlier waves of the WVS the measures for environmental concern were biased in favor of more affluent respondents (Dunlap and York 2008: 534). In the fifth wave, there are two willingness-to-pay items. In order to avoid being biased and to check if there is indeed a difference in environmental concern, the ten-item factor will be compared to an eight-item factor that excludes those two items. The eight-item factor is shown in table 4. The first two questions are omitted and the threshold is changed to 5.

Table 4: WVS questions and accepted answers for environmental concern factor without willingness-to-pay

Data set internal question number	WVS question number	Shortened question title	Accepted answer codes in numbers
149	V107	Government reduce pollution for free	1 (“strongly agree”), 2 (“agree”)
146	V104	Protecting environment vs. economic growth	1 (“protecting environment”)
150	V108	Poor local water quality	1 (“very serious”), 2 (“somewhat serious”)
151	V109	Poor local air quality	1 (“very serious”), 2 (“somewhat serious”)
152	V110	Poor local sewage and sanitation	1 (“very serious”), 2 (“somewhat serious”)
153	V111	Global warming	1 (“very serious”), 2 (“somewhat serious”)
154	V112	Global loss of species	1 (“very serious”), 2 (“somewhat serious”)
155	V113	Global pollution	1 (“very serious”), 2 (“somewhat serious”)
			Threshold: 5

(Data derived from 2005-2008 World Values Survey)

3.3.2 Age

Table 5: WVS questions and accepted answers for age factor

Data set internal question number	WVS question number	WVS question	Shortened question title	Accepted answer codes in numbers
332	V237	This means you are __ years old.	Age	18-29 (young adults), 30-47 (adults), 48-59 (middle-aged adults), 60+ (elderly)

(Data derived from 2005-2008 World Values Survey)

In order to be able to distinguish between birth cohorts, the sample for each country will be split into four age groups and correlated with the environmental concern factor. The environmental concern responses (see 3.3.1) from each age group will be used in order to compare expressed concern between age groups.

Respondents are grouped into four age groups that represent the different life stages. The first group will encompass all people up to the age of 29, since that is approximately the current average age of the first birth in the four countries (Lin 2006: 2; Statistics Korea 2012: 3; Atsmon et al. 2012: 18; “Average Age of 1st-Time Mothers”). This group is called “young adults.” The next group includes all the people who are of the age where they would be rearing children, so from 30 to 47. (At the age of 47, the first child would be 18 years old and therefore considered adult.) For lack of a better terminology, this group is called simply “adults.” The next age group encompasses all the people who are old enough to have already raised children and who are still working, so people between 48 and 59 years old. These are the “middle-aged adults.” Although the retirement ages vary in the four countries, the “elderly” group includes all those respondents aged 60 or more. This approach follows Jackson, Howe and Peter's (2012), who wrote a report about retirement in East Asia and included those aged 20 to 59 in the working-age population.

Since this analysis does not draw on longitudinal data, it is not possible to determine whether the concern of older respondents is an age effect (see 2.2.1), because we cannot know if their concern changed with age.

3.3.3 Gender

Table 6: WVS questions and accepted answers for gender factor

Data set internal question number	WVS question number	WVS question	Shortened question title	Accepted answer codes in numbers
330	V235	Sex	Gender	1 (male), 2 (female)

(Data derived from 2005-2008 World Values Survey)

In order to link gender to the environmental concern factor, a dummy variable is used, with male being 1 and female being 2, thus providing a numeric hook for the analysis procedure. With this hook the analysis of gender can be made analogous to the analysis of age as has already been described.

3.3.4 Exposure to Degradation

Table 7: WVS questions and accepted answers for exposure factor

Data set internal question number	WVS question number	WVS question	Shortened question title	Accepted answer codes in numbers
150	V108	Environmental problems in your community: Poor water quality	Poor local water quality	1 (“very serious”), 2 (“somewhat serious”)
151	V109	Environmental problems in your community: Poor air quality	Poor local air quality	1 (“very serious”), 2 (“somewhat serious”)
152	V110	Environmental problems in your community: Poor sewage and sanitation	Poor local sewage and sanitation	1 (“very serious”), 2 (“somewhat serious”)

Threshold: 2

(Data derived from 2005-2008 World Values Survey)

The third factor is exposure to degradation. In order to assess whether the degradation hypothesis is valid for East Asians, the three WVS items about perceived severity of local environmental problems are used as the independent factor. Because they are part of the environmental concern factor, only the remaining seven items are used in this case to tap concern. It was ensured that a seven-item factor with a threshold of 5 was a reasonable approximation for the ten-item factor with a threshold of 6 that is used for the other factors (see 4.4). Respondents are asked to rate poor water quality, poor air quality, and poor sewage and sanitation in their community on a range from “very serious” to “not serious at all.” For

the purpose of this analysis, any respondent who rates two of the three items as somewhat or very serious is considered to be exposed to environmental problems. So those people make up the sample group which is assessed for its overall environmental concern using the remaining seven items.

3.3.5 Social Class

To find out how social class is linked with environmental concern, education level, income level and self-ascribed social class are all separately correlated with the environmental concern factor.

Education

Table 8: WVS questions and accepted answers for education factor

Data set internal question number	WVS question number	WVS question	Shortened question title	Accepted answer codes in numbers
334	V238	What is the highest educational level that you have attained?	Education level	1-3 (lower education), 4-7 (middle education), 8-9 (higher education)

(Data derived from 2005-2008 World Values Survey)

There are nine education levels in the WVS. For this analysis, the people with no formal, incomplete or complete elementary education are combined in the “lower education” group. Those with incomplete or complete secondary school education are in the “middle education” group, and the respondents with university education with or without degree are in the “higher education” group.

Income

Table 9: WVS questions and accepted answers for income factor

Data set internal question number	WVS question number	WVS question	Shortened question title	Accepted answer codes in numbers
351	V253	Scale of incomes	Income	1-3 (lower income), 4-7 (middle income), 8-10 (higher income)

(Data derived from 2005-2008 World Values Survey)

As for the answers to income in the WVS, respondents were presented with ten steps (“lower step” to “tenth step”) using which they should gauge their income levels. Only the Japanese respondents were given actual numbers, ranging from less than 3,000,000 Yen per year to more than 12,000,000 Yen. For this analysis, any answers on the three lower steps put the respondents in the “lower income” group. Answers on the fourth to seventh step correspond to the “middle income” group, and eighth to tenth step represent those with a “higher income.”

Subjective Social Class

Table 10: WVS questions and accepted answers for subjective social class factor

Data set internal question number	WVS question number	WVS question	Shortened question title	Accepted answer codes in numbers
349	V252	Social class (subjective)	Self-ascribed social class	1 (upper class), 2-3 (middle class), 4-5 (lower/working class)

(Data derived from 2005-2008 World Values Survey)

The WVS also asks respondents to say which social class they think they belong to. Those who assign themselves the label lower class or working class are combined in the “lower/working class” group. People who self-ascribe to the lower middle or upper middle classes are assigned the label “middle class.” Respondents choosing the upper class response are in the “upper class” category.

3.3.6 Postmaterialism

Table 11: WVS questions and accepted answers for postmaterialism factor

Data set internal question number	WVS question number	WVS question	Shortened question title	Accepted answer codes in numbers
362	Y001	Post-materialist index 12-item	Postmaterialist index	3-5 = postmaterialist

(Data derived from 2005-2008 World Values Survey)

There are two postmaterialist indexes in the fifth wave of the WVS, a twelve-item one and a four-item one. The first has six levels from 0 (“materialist”) to 5 (“postmaterialist”). The four-item index also has a “mixed” category, but since I only want to categorize people as materialist or postmaterialist, the twelve-item indicator will be used. Answers ranging from 0 to 2 show that respondents have materialist values, and those from 3 to 5 place them in the postmaterialist dimension.

3.3.7 Libertarianism and Authoritarianism

Libertarianism

As mentioned in section 2.2.4, libertarianism is characterized by a focus on social, psychological and physical freedom. Broadly following Flanagan and Lee's (2000) approach, the following eight items will determine respondents' libertarian views.

Table 12: WVS questions and accepted answers for libertarianism factor

Data set internal question number	WVS question number	WVS question	Shortened question title	Accepted answer codes in numbers
20	V12	Here is a list of qualities that children can be encouraged to learn at home. Which, if any, do you consider to be especially important? Please choose up to five. Independence	Important child quality: independence	1 (“important”)
23	V15	Here is a list of qualities that children can be encouraged to learn at home. Which, if any, do you consider to be especially important? Please choose up to five. Imagination	Important child quality: imagination	1 (“important”)
111	V71	If you had to choose, which one of the things on this card would you say is most important? And which would be the next most important? First choice	First aim of respondent	2 (“give people more say”), 4 (“protecting freedom of speech”)
112	V72	If you had to choose, which one of the things on this card would you say is most important? And which would be the next most important? Second choice	Second aim of respondent	2 (“give people more say”), 4 (“protecting freedom of speech”)
283	V202	Please tell me for each of the following statements whether you think it can always be justified, never be justified, or something in between. Homosexuality	Homosexuality justifiable	6-10 (sometimes to always justifiable)
284	V203	Please tell me for each of the following statements whether you think it can always be justified, never be justified, or something in between. Prostitution	Prostitution justifiable	6-10 (sometimes to always justifiable)
285	V204	Please tell me for each of the following statements whether you think it can always be justified, never be justified, or something in between. Abortion	Abortion justifiable	6-10 (sometimes to always justifiable)
286	V205	Please tell me for each of the following statements whether you think it can always be justified, never be justified, or something in between. Divorce	Divorce justifiable	6-10 (sometimes to always justifiable)
				Threshold: 5

(Data derived from 2005-2008 World Values Survey)

One question in the WVS asks respondents to choose up to five out of ten important qualities that children can be taught at home. Here, choosing either independence or imagination shows a libertarian view. Another question asks respondents to choose two out of four answers as most and second most important. The four answers are “maintaining order in the nation,” “give people more say,” “fighting rising prices” and “protecting freedom of speech.” Choosing either “give people more say” or “protecting freedom of speech” as their first or second choice is deemed libertarian. The remaining four items inquire if respondents think certain things can always or never be justified, on a range from 1 (“never”) to 10 (“always”). The four items are “homosexuality,” “prostitution,” “abortion” and “divorce.” Any answers ranging from 6 to 10 are considered to be libertarian. All of the answers above that are seen as libertarian are assigned a weight of 1. The threshold for libertarianism is set at 5, so respondents with at least five libertarian answers form the subsample here.

In short, any respondents whose answers indicate a focus on tolerance, independence and self-empowerment are considered for this study to have a libertarian worldview.

Authoritarianism

Authoritarian values are those that emphasize conformity, loyalty, hierarchic interdependence and discipline. For the authoritarian factor, some of the same questions as for libertarianism are used.

Table 13: WVS questions and accepted answers for authoritarianism factor

Data set internal question number	WVS question number	WVS question	Shortened question title	Accepted answer codes in numbers
29	V21	Here is a list of qualities that children can be encouraged to learn at home. Which, if any, do you consider to be especially important? Please choose up to five. Obedience	Important child quality: obedience	1 (“important”)
111	V71	If you had to choose, which one of the things on this card would you say is most important? And which would be the next most important? First choice	First aim of respondent	1 (“maintaining order in the nation”)
112	V72	If you had to choose, which one of the things on this card would you say is most important? And which would be the next most important? Second choice	Second aim of respondent	1 (“maintaining order in the nation”)
120	V78	I'm going to read out a list of various changes in our way of life that might take place in the near future. Please tell me for each one, if it were to happen, whether you think it would be a good thing, a bad thing, or don't you mind? Greater respect for authority	Greater respect for authority	1 (“good thing”)
219	V148	I'm going to describe various types of political systems and ask what you think about each as a way of governing this country. For each one, would you say it is a very good, fairly good, fairly bad or very bad way of governing this country? Having a strong leader who does not have to bother with parliament and elections	Having a strong leader	1 (“very good”), 2 (“fairly good”)
223	V150	I'm going to describe various types of political systems and ask what you think about each as a way of governing this country. For each one, would you say it is a very good, fairly good, fairly bad or very bad way of governing this country? Having the army rule	Having the army rule	1 (“very good”), 2 (“fairly good”)

Threshold: 4

(Data derived from 2005-2008 World Values Survey)

First, replies choosing obedience as an important child quality are given a weight of 1. Next, people choosing “maintaining order in the nation” as their first or second most important aim are assigned a weight of 1. One question asks whether the respondent thinks that greater respect for authority in the future will be a good thing or not. Positive answers are deemed authoritarian and consequently weighted as 1 here. Two remaining items explore whether respondents think “having a strong leader” or “having the army rule” are “very good” to “very

bad” (on a scale from 1 to 4) ways of governing their country. Answering either 1 or 2 will be weighted with 1. The threshold for the authoritarian value is 4.

To sum up, respondents whose answers show they value discipline, maintaining order or having an authority power rule are classified as authoritarian for this study.

3.3.8 Altruism and Egoism

One dimension that is featured strongly in several explanations of environmentalism is egoism versus altruism. The biospheric altruism dimension is difficult to test because there are no WVS items explicitly tapping biospheric altruism. Therefore, only egoism and (social) altruism are linked with environmental concern here.

Egoism

Table 14: WVS questions and accepted answers for egoism factor

Data set internal question number	WVS question number	WVS question	Shortened question title	Accepted answer codes in numbers
123	V81	Now I will briefly describe some people. Using this card, would you please indicate for each description whether that person is very much like you, like you, somewhat like you, not like you, or not at all like you? It is important to this person to be rich; to have a lot of money and expensive things	Important to be rich	1-4 (“very much like me” to “a little like me”)
127	V85	Now I will briefly describe some people. Using this card, would you please indicate for each description whether that person is very much like you, like you, somewhat like you, not like you, or not at all like you? Being very successful is important to this person; to have people recognize one's achievements	Important to be very successful	1-4 (“very much like me” to “a little like me”)
Threshold: 2				

(Data derived from 2005-2008 World Values Survey)

In order to test if and how egoistic values influence environmental concern, the two Schwartz items “Importance of being rich” and “Importance of being very successful” are used. They represent the values “power” and “achievement.” Both of these values are part of the self-enhancement dimension in Schwartz's value cluster (Schwartz et al. 2012: 669), which corresponds to the VBN theory's egoism or self-interest (see 2.2.2). Each one of the Schwartz items in the WVS provides six possible answers, ranging from “very much like me” to “not at all like me.” Therefore, any respondent who answers both items with responses 1 to 4 (“very

much like me” to “a little like me”) is considered to be egoistic, because those answers are positive. Only respondents answering both of them positively will reach the threshold 2, as each item gets a weight of 1 assigned for a positive answer.

Altruism

Table 15: WVS questions and accepted answers for altruism factor

Data set internal question number	WVS question number	WVS question	Shortened question title	Accepted answer codes in numbers
24	V16	Here is a list of qualities that children can be encouraged to learn at home. Which, if any, do you consider to be especially important? Please choose up to five. Unselfishness	Important child quality: unselfishness	1 (“important”)
28	V20	Here is a list of qualities that children can be encouraged to learn at home. Which, if any, do you consider to be especially important? Please choose up to five. Tolerance and respect for other people	Important child quality: tolerance	1 (“important”)
39	V31	Now I am going to read out a list of voluntary organizations; for each one, could you tell me whether you are a member, an active member, an inactive member or not a member of that type of organization? Charitable organization	Member of charity organization	1 (“inactive member”), 2 (“active member”)
126	V84	Now I will briefly describe some people. Using this card, would you please indicate for each description whether that person is very much like you, like you, somewhat like you, not like you, or not at all like you? It is important to this person to help the people nearby; to care for their well-being	Important to help people	1-4 (“very much like me” to “a little like me”)

Threshold: 3

(Data derived from 2005-2008 World Values Survey)

The altruistic value orientation of respondents is assessed with four WVS questions, of which one is a Schwartz item (“Important to help people”). Respondents who mentioned unselfishness or tolerance as important child qualities get assigned a weight of 1 for their answer, as do answers 1 through 4 for the Schwartz item and for respondents who claim to be members of a charitable organization. Those respondents whose replies reach the threshold of 3 are deemed for this study to have an altruistic disposition.

To sum up, for the purpose of this study people whose answers show they value success and personal wealth are considered to have an egoistic disposition, while those who show they care for other people's well-being are deemed altruistic.

3.3.9 Faith in Science

Faith in science is another factor that gets quite some attention with respect to environmentalism. As mentioned earlier, ecocentrism is sometimes contrasted with technocentrism (O'Riordan 1976), and it is assumed that a strong belief in science and technology is in line with the nature-exploiting DSP rather than the ecocentric NEP (Barrett, Kuroda and Miyamoto 2002; see 2.2.3). Based on this reasoning, this study tests if East Asians' faith in science is correlated with their environmental concern. To this end three questions from the WVS are analyzed.

Table 16: WVS questions and accepted answers for faith in science factor

Data set internal question number	WVS question number	WVS question	Shortened question title	Accepted answer codes in numbers
133	V91	Now, I would like to read some statements and ask you how much you agree or disagree with each of these statements. For these questions, a 1 means that you completely disagree and a 10 means that you completely agree. Science and technology are making our lives healthier, easier, and more comfortable	Science makes our lives better	6-10 (“somewhat” to “completely agree”)
134	V92	Now, I would like to read some statements and ask you how much you agree or disagree with each of these statements. For these questions, a 1 means that you completely disagree and a 10 means that you completely agree. Because of science and technology, there will be more opportunities for the next generation	Science benefits next generation	6-10 (“somewhat” to “completely agree”)
165	V123	All things considered, would you say that the world is better off, or worse off, because of science and technology? Please tell me which comes closest to your view on this scale: 1 means that the world is a lot worse off, and 10 means that the world is a lot better off.	World better or worse off	6-10 (“better” to “a lot better off”)
Threshold: 2				

(Data derived from 2005-2008 World Values Survey)

The three questions all ask explicitly whether the respondent believes that science and technology are beneficial or harmful for mankind and the world. Answers ranging from 6 to 10 in all three questions show faith in the benefits of science and technology. The threshold for faith in science is set at 2. Consequently, if at least two out of those three questions are answered positively, then the respondent is considered for this study to have faith in science. If the answers are negative, they are considered to have no faith in science.

3.4 Free-form Self-conducted Questionnaires

In order to strengthen the findings that the analysis of the WVS brings forth, I interviewed a number of Chinese, Japanese, Korean and Taiwanese citizens of different ages and occupations. The interviewees were garnered through my international network, with extra emphasis on the inclusion of activists and policymakers. The questions can be found in appendix 2 and are based on the factors that are used in this paper. The interviewees were asked about their perceptions regarding the relationship between a factor (i.e. age) and environmental concern in their country. As the point of these responses is to give more credence to the claims made by this study, the interviewees' opinions merely represent individual perceptions and views.

4 FINDINGS

In East Asia, environmentalism first emerged in response to industrial pollution. Japan was the first country to implement environmental legislation following the heavy pollution of the 1950s through 1970s. The industrial pollution led to many diseases, which resulted in the emergence of environmentalist movements in those decades (see Broadbent et al. 2006: 20-1). Increasingly, pollution caused by urban lifestyles substituted the industrial pollution caused by corporations. In China, the first environmental law was established in 1979, which led to a proliferation of rural environmental protests (Jing 2003: 206). Jing talks of a “severe crisis” of the Chinese environment which lasted through the 1980s and 1990s (Jing 2003: 217). Environmental problems have led to rising public protests across China, as well as vast economic losses (see Liu and Leiserowitz 2009: 35). South Korea and Taiwan underwent very similar developments with respect to environmentalism. Their environmentalist movements emerged in the 1980s, alongside pro-democracy movements. In Korea, these movements formed to challenge authoritarian rule, and environmentalism became wide-spread in the 1990s through increasing media coverage of the formation of nongovernmental organizations (NGOs, see Eder 1996: 77; 112). In Taiwan, the social movements pressed for democratization and environmental protection in opposition to the leading Kuomintang (Steinberg 2005: 353). Environmental movements and protests became more wide-spread and well-covered in the 1980s, as victims of local pollution organized protests that found outside supporters (Hsiao 1990: 167-8).

These developments show that there is indeed a trend of environmentalism in East Asia. So what are the factors that influence environmental concern in individual East Asians? To provide an answer to this question, data from the WVS and individual perceptions of East Asian interviewees will be used.

4.1 Overall Environmental Concern in East Asia

Before the environmental concern of the different East Asian samples is linked to the other factors explained in section 3.3, it is helpful to look at the overall environmental concern as measured according to the explanation given in section 3.3.1 by region.

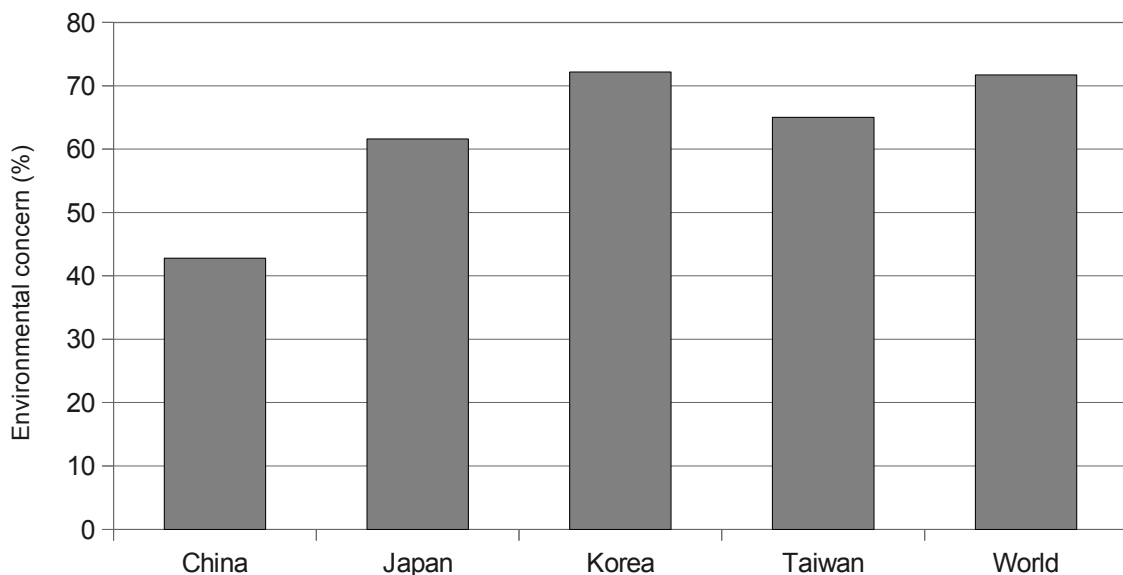


Figure 1: Overall environmental concern by region

(Data derived from 2005-2008 World Values Survey)

Figure 1 shows the overall environmental concern of the respondents of each sample group compared with each other and that of all respondents of the WVS fifth wave. Using the ten-item factor for environmental concern, it turns out that 42.8 percent of Chinese respondents show concern as defined earlier (see 3.3.1). This means that a little less than half of Chinese respondents answered at least six out of ten environmental concern items in a way that showed concern. 61.6 percent of Japanese respondents are concerned about the environment, and slightly more (65 percent) of the Taiwanese. Korean respondents are most concerned: 72.2 percent showed concern by the criteria of this study. Koreans are the closest to the global average of the WVS fifth wave: of all surveyed people (including East Asians),

71.7 percent are concerned about environmental quality. Taiwanese and especially Japanese respondents' environmental concern is rather lagging behind compared to all countries' respondents' concern. China is far behind the others with less than half of the respondents showing concern for environmental quality.

East Asians' Environmental Concern without Willingness-to-pay

As mentioned above, the WVS (and Inglehart's methods) have been criticized for being biased because some willingness-to-pay questions are used to determine respondents' environmental attitude. Before we go on to see what links exist between environmental concern and different sociodemographic and value factors, we will briefly check how East Asians' overall environmental concern is affected when the two willingness-to-pay items are removed from the concern factor. For this, the first two items (Give part of income, Increase in taxes) are taken out of the environmental concern factor, because they are the two that may favor positive responses from more affluent respondents. So eight items are left to assess concern, and therefore the threshold is changed to 5, because as explained in the method section, the threshold in this study is always set to slightly more than 50 percent.⁸

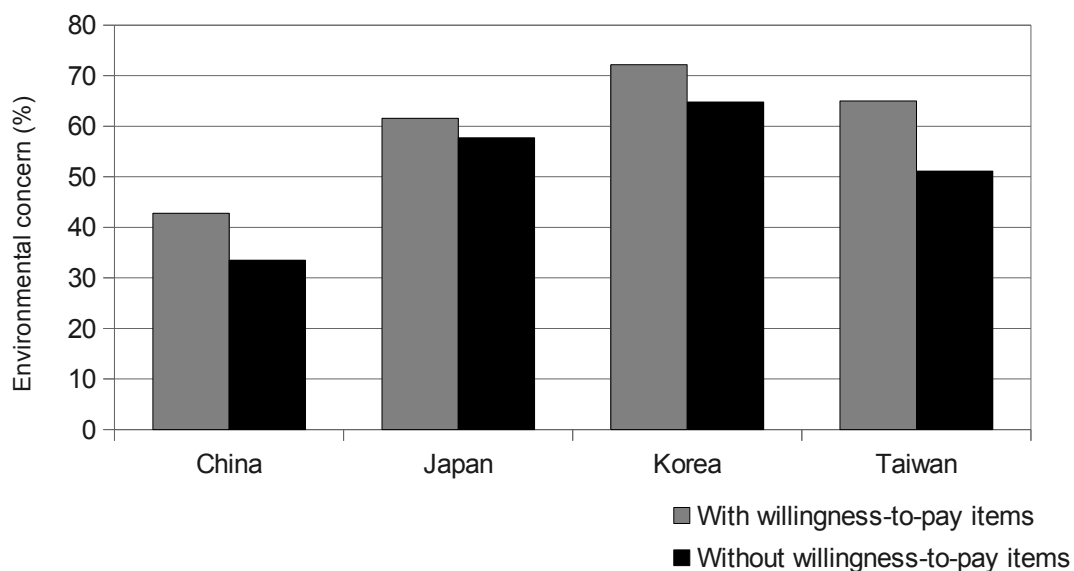


Figure 2: Environmental concern with and without willingness-to-pay items

(Data derived from 2005-2008 World Values Survey)

⁸ For the ten-item-factor the threshold was at 6 (so respondents answering at least 60 percent of the ten questions positively are deemed to be environmentally concerned), so a threshold of 5 for the eight-item-factor means that respondents replying to 62.5 or more percent of the eight questions are considered for this study to be concerned. This is a reasonable approximation.

The criticism in the literature suggests that environmental concern should increase when willingness-to-pay is not included. The findings shown in Figure 2 call this criticism into question, as there is a slight reduction across all sample countries when willingness-to-pay is excluded. This could be due to the discrete evaluation threshold. The threshold changes a little bit between the ten-item and eight-item factors, so it is not completely disproved that there is a difference depending on whether willingness-to-pay is included or not, but it seems like willingness-to-pay is not a big issue. The reasons for this are likely cultural, as the countries in the region all share a relatively strong government and strong sense of government responsibility.

Each of the following sub-chapters will start out with a table showing the distribution of the factor that is being assessed in the four country samples. Following this, it will be shown how the factor and environmental concern are linked. Tentative explanations for these links or lack thereof will be given and supported by using interviewees' statements and opinions from the free-form questionnaire.

One issue that must be acknowledged is that the group of respondents in any country that emerges after “sieving off”⁹ the other groups is relatively small. Therefore, the results must be interpreted with caution. Also, due to rounding errors the sum of all the percentages in the tables may not always add up to 100 percent.

4.2 Age and Environmental Concern

Before assessing whether East Asians' age is linked to their concern for environmental quality, let us take a look at the age distribution for the four countries, with the age groups set down in section 3.3.2.

9 The process of selecting groups is referred to in this work as “sieving” as the interesting results are strained off from a large set of data with over 67,000 survey responses.

Table 17: Age distribution of the WVS samples for East Asia

	China		Japan		Korea		Taiwan	
	%	no.	%	no.	%	no.	%	no.
18-29	14.9	301	16.5	181	23.2	278	23.3	286
30-47	42.4	854	30.7	337	43.9	527	35.5	436
48-59	26.4	532	24.9	273	16.8	201	23.8	293
60+	16.3	328	27.8	305	16.2	194	17.3	212
Total		2015		1096		1200		1227

(Source: 2005-2008 World Values Survey)

It is noticeable that in each sample, the adult group is overrepresented. Young adults make up the smallest part in China and Japan, and more than a quarter of Japanese respondents are elderly, compared with less than a fifth in the other three countries. This should be taken into consideration when interpreting the results of the analysis. In the next step, the environmental concern responses (see 3.3.1) were assessed by age group to see whether any trends are discernible.

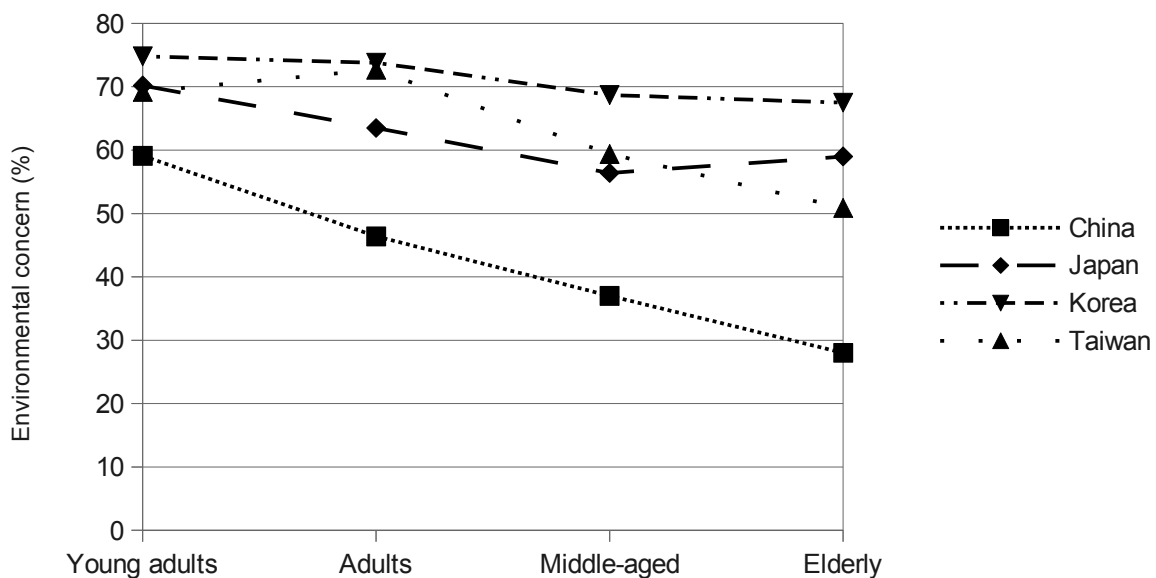


Figure 3: Environmental concern by age groups

(Data derived from 2005-2008 World Values Survey)

The analysis shows a negative correlation between age and environmental concern for all four samples, with some reservations. This means that in East Asian WVS respondents, environmental concern is generally found more often in younger people than in older ones. Unique to Japan a greater percentage of respondents of the elderly group exhibited concern than the middle-aged group. In Taiwan, more adults aged 30 to 47 are concerned than young adults. Apart from that, the trend is towards fewer concerned individuals as age increases. In

Korea, the trend is less pronounced than in the other countries. Only in China is there a strong difference between middle-aged and elderly.

The results of the analysis are not surprising, as the main trend is in line with the age hypothesis and the expected findings (see 2.4.1). As explained above, the age hypothesis supposes that younger people tend to be more concerned about the environment than older individuals. There are several reasons why young East Asians would be more inclined to care about the environment than older people.

One crucial reason is education. Education helps to build awareness and enables people to access information on environmental issues. Many of the interviewees mention education as a motivator for young people's environmental concern. The majority of Chinese and Taiwanese interviewees believe that younger people in their country are more likely to show environmental concern than older ones. Most of them back up their claim by pointing to the crucial role that education plays. Young people are believed to be more pliable and therefore more easily persuaded to protect the environment than older people. They would also try to spread their knowledge and concern for the environment through campaigns, and participate in pro-environmental actions. Yixian Z., an assistant researcher at the National Taiwan University, emphasizes the idealism of students and their obedience to behave pro-environmentally if they are told to by teachers. She believes that upon entering the working world, though, other goals would become more important and make people more egoistic. Consequently, concern for the environment would suffer.¹⁰ Lin Chi-Min, a Taiwanese student, also stresses the importance of education in forming a pro-environmental attitude in young Taiwanese. When Taiwan was developing its economy, the environment was seen as a resource that was exploited for industrial reasons, and people lacked knowledge about its protection. But better education and the government policies of the last two decades made people more aware that natural resources are not endless. The younger cohorts have been exposed to this information from early on, which is why they are used to behaving pro-environmental, i.e. through the “reduce, reuse and recycle” policy on campuses.¹¹

As was mentioned earlier, knowledge of the interdependence of ecosystems is fairly recent. Therefore it seems reasonable to assume that younger birth cohorts are taught more about environmental protection than previous cohorts. Yang Li, a Chinese school counselor, points out that Chinese of the 1980-1995 birth cohort would be concerned about the environment because most of them have a college degree. In contrast, the birth cohort born in the 1950s lacked such education, as “poverty and hunger were the main social problems

¹⁰ Yixian Z. Email interview with author. May 31, 2013.

¹¹ Lin Chi-min. Email interview with author. June 11, 2013.

[then],” he claims.¹² Apart from the different education that the different birth cohorts received, a prevalent notion that came up in the interviews was the different experiences those cohorts made. In this vein, the exposure to environmentalism through the media could be another reason why environmental concern is more prevalent in young East Asians.

While environmentalism has not been a topic of much debate in the youth of older birth cohorts, i.e. before the 1960s, it is widespread enough today that young people are more exposed to it than older people were in their formative years. Shen and Saijo emphasize that young people might be more likely to have access to information about environmental problems than older citizens (Shen and Saijo 2008: 43). Younger people are arguably also more likely than elderly ones to have access to and regularly use information sources such as the Internet and social media tools. These tools can provide information on environmental issues, which may lead to ecological awareness and concern. Dunlap and Van Liere suggest that young people who are constantly exposed to information about environmental degradation through TV or Internet would likely form environmental opinions that would stay with them while they grew up (Dunlap and Van Liere 1980: 183). So the older birth cohorts may be less likely to show concern today because they have not grown up with a pro-environmental mindset. However, it is possible that young people's concern may be more visible because they know how to use modern media, as one Chinese interviewee points out.¹³ This would not mean that the older generation is necessarily less environmentally active.

Besides sharing information on environmental problems, the media can also be a tool for spreading environmentalism through celebrities and public icons. This point is raised by several interviewees, as they believe that such people have a lot of influence over their fans. By documenting their pro-environmental actions on social networks like Twitter and Facebook or on blogs, celebrities would have the power to raise environmental concern in their followers.¹⁴

Apart from being generally better educated or more exposed to environmentalism at an early age, younger people likely also have more freedom in terms of time and money compared to older people. They are likely to have a lower standard of living, and their parents probably support them financially. They have not yet taken up a specific position in society, which allows them to experiment with different interests. Therefore, they might have more opportunities to devote themselves to environmentalism than older people. One Chinese interviewee thinks that Chinese aged 25 to 32 are the most active in environmental protection, because they have not yet reached what they want in life. People older than 32 “are more

¹² Yang Li. Email interview with author. June 3, 2013.

¹³ Qiao Peng. Email interview with author. June 9, 2013.

¹⁴ Interview with Taiwanese employee. Email interview with author. June 5, 2013; Kim Hyo. Email interview with author. May 30, 2013.

reluctant to change their mind” and those below 25 are still influenced by other people's perceptions of the world rather than their own.¹⁵ On the other hand, many young East Asians are actually less likely than older people to have free time. In order to be competitive and stay in the race for good jobs, many youths are drilled to focus all their energy on studying (see i.e. “The Other Arms Race”). One Korean interviewee, a teacher, thinks that this fact hinders the development of environmentalism in young people.¹⁶

Yet the majority of the Japanese and Korean interviewees believed that older people in their country would be more likely to care about environmental quality than younger ones. Although such a trend is observable only in part of the results from the analysis, there are several arguments that speak for this claim.

First, older people may have experienced environmental degradation in their youth and have been influenced by that experience. Perhaps an environmental protection apparatus was set up in response to those problems, which may have resulted in a better environment. Environmental pollution might therefore not be as bad now as it was before, and young people may not have to suffer the same levels of pollution that older birth cohorts did. The lack of personal and collective experience are two factors that hinder increased concern for the environment (Takács-Sánta 2007: 33). This argument is likely to hold true for Japan, where environmental movements started earlier than in the rest of East Asia, in response to pollution-related diseases. Prompted by rapid industrialization and democratization, Japanese citizens' environmental concern found a voice before it did in the neighboring countries (Broadbent et al. 2006). The people who experienced the rise of environmentalism are already in late adulthood today. This could be a reason why in Japan, a slightly larger part of the older group showed concern compared to the middle-aged adults in the analysis. In recent decades, young Chinese have grown up witnessing severe environmental degradation, which may be why the line for China in the analysis is steeper than for the other countries.

Second, many older people are or feel responsible for raising their young. Because children will care for them in their old age, the older people want to provide for them and make sure they live a good life. This phenomenon has been intensified in China by the one-child policy. The older generation might care about environmental problems because they want their offspring to have a good life. So despite their age, they are concerned about the future. But this is not necessarily restricted to older people. Young people who become parents could also be motivated to care about environmental quality because they want their children to be healthy. Japanese interviewee Aiko, who works for the NGO Peaceboat, agrees that the different life stages rather than age itself have an impact on individual environmental

15 Interview with Chinese management accountant. Email interview with author. June 1, 2013.

16 Interview with Korean teacher. Email interview with author. June 15, 2013.

concern. Having children or grandchildren is a top motivator for people to care about the environment, she thinks. “Now with the Fukushima accident, young female residents of the area are very worried whether or not they should try to have babies because of the environmental harm.” She also emphasizes that the different birth cohorts have been exposed to different environmental problems, “such as discharged mercury from factories and ban on CFC [chlorofluorocarbon] for ozone damage.”¹⁷ According to a Korean interviewee, Koreans in their thirties to fifties would show most concern for environmental quality, because they may become parents or develop “their own philosophy,” so they would value their offspring's future or aesthetic things more than other age groups. With respect to older people, she is convinced that habits are difficult to change, so people who have spent their life concerned with survival and getting by are hardly likely to change in their old age and become pro-environmental.¹⁸ The analysis found that more 30- to 47-year-old Taiwanese are environmentally concerned than the younger group. People of that age are likely to have achieved a good standing in society and have some influence in their companies and their own homes. Positive peer pressure from their social circles could be a motivator to behave pro-environmental. One Taiwanese interviewee, a 53-year-old professor, adds another reason. He claims that middle-aged Taiwanese are the most concerned because they are likely to have a good position in life. Revisiting places from their childhood that have become severely degraded through environmental pollution would be a main motivator for those people to be concerned and become active in protecting the environment.¹⁹

However, older people who are already retired or out of a job may also have more time than the working population to act pro-environmental. But it is difficult to say whether elderly people act pro-environmental because they are concerned or because they made some experiences that resulted in such behaviors. People who grew up during wars, for example, may behave more frugally than people of the same age group who did not. In such a case, it is the experience of scarcity and not their environmental concern that makes them behave as they do (Olli, Grendstad and Wollebaek 2001: 184). Several interviewees mention that elderly people have a habit of saving things. In Japan, this could also have to do with the Buddhist concept of *mottainai* (see Fujii 2006: 267). The word is used to express regret about wasting resources. Fujii emphasizes that parents use it to teach their children to use resources respectfully (Fujii 2006: 267). He argues that passing on this concept to new generations serves as “an alternative kind of environmental education to one that teaches the scientific relationship between behavior and global environmental problems.” (Fujii 2006: 267)

17 Aiko. Email interview with author. June 7, 2013.

18 Interview with Korean teacher. Email interview with author. June 15, 2013.

19 Interview with Taiwanese professor. Email interview with author. June 4, 2013.

To sum up, the analysis found that the age hypothesis was valid in all four countries with some reservations for Japan and Taiwan. More Taiwanese adults were concerned than young adults. In Japan, more elderly respondents showed concern compared to middle-aged Japanese. Interestingly, most Chinese and Taiwanese interviewees tended to think that younger people would show most concern, while the majority of Japanese and Korean interviewees thought it would be older people, or depending on birth cohort experiences. Reasons for environmental concern in young people range from their formal education to their relative freedom and their socialization in a time with exposure to environmentalism through the media. Older people, on the other hand, are found to show environmental concern because they care for their offspring's well-being, because they experienced severe pollution while growing up or because of positive peer pressure. According to the analysis and the interviewees' statements, the claims made in the age hypothesis thus apply to East Asia.

4.3 Gender and Environmental Concern

Table 18: Gender distribution of the WVS samples for East Asia

	China		Japan		Korea		Taiwan	
	%	no.	%	no.	%	no.	%	no.
Male	45.8	923	44.1	483	49.8	598	50.6	621
Female	54.2	1092	55.9	613	50.2	602	49.4	606
Total		2015		1096		1200		1227

(Source: 2005-2008 World Values Survey)

From table 18 we can see that the Chinese and Japanese WVS samples are female-biased, with 8.4 percent and 11.8 percent more females in the sample, respectively. Korea and Taiwan are more evened out. This should be considered in the interpretation of the results.

Table 19: Environmental concern by gender

	China		Japan		Korea		Taiwan	
	%	no.	%	no.	%	no.	%	no.
Male	45.8	923	44.1	483	49.8	598	50.6	621
Male concerned	47.6	439	63.4	306	71.9	430	65.5	407
Female	54.2	1092	55.9	613	50.2	602	49.4	606
Female concerned	38.8	424	60.2	369	72.4	436	64.4	390
Total sample		2015		1096		1200		1227
Total concerned		863		675		866		797

(Data derived from 2005-2008 World Values Survey)

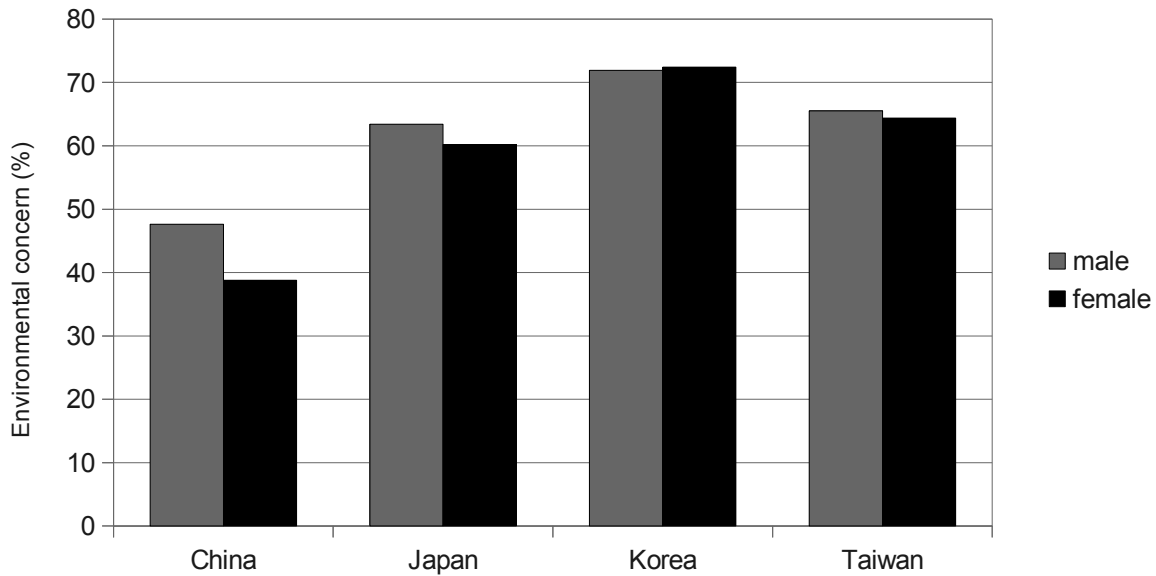


Figure 4: Environmental concern by gender

(Data derived from 2005-2008 World Values Survey)

With respect to environmental concern, the analysis shows that in most cases, there is no difference between the genders related to concern. However in China a higher percentage of men than women shows environmental concern (47.6 percent versus 38.8 percent). In Japan, Korea and Taiwan virtually no difference was found with regard to gender and environmental concern. It is interesting to note that in the Chinese sample more males showed concern although the sample was female-biased.

Although there are no strong gender biases in the data, the interview respondents showed a perceived difference in environmental concern among the genders. Here are some examples of their arguments.

One interviewee claims it is not inherent differences in the gender that might result in different concern in men and women, but the fact that there are uneven distributions of men and women in different populations, such as management, where there are more males.²⁰ Also, most workers in construction or on industrial plants are male. While East Asian men are more likely to be seen in the public sphere, women typically inhabit the private sphere and have more control there (South Korea's president Park Geun-hye being one exception). Shen and Saijo claim based on their study of Shanghai residents that men there have a higher education and are more politically active than women. Men's concern was found to be higher than that of Shanghainese women (Shen and Saijo 2008). The authors indicate that

²⁰ Sumi Miyoshi. Email interview with author. June 5, 2013.

environmental protection has been made an explicit aim in China's 2005 five-year-plan, so people who were already engaging in political issues would have been enticed to be concerned about environmental problems (Shen and Saijo 2008: 48). The finding from this paper's analysis for China where more men than women showed concern could be explained in part by the different distributions of men and women in different populations.

Following the logic of the private-public argument, East Asian women would be more likely to have power over household decisions than men. A number of interviewees argue that focusing on housework and raising children would make women more likely to behave pro-environmental. One interviewee, a Korean teacher, believes that environmental concern is more ingrained in women than men, because women's traditional role was in the household, while men worked jobs outside the home. Women were responsible for the household economy and tried to save money. They had more time to think about the effect that environmental quality has on people. According to the interviewee, modern Korea still rests on this traditional understanding of gender distribution.²¹ Being busy with household work, however, could also make women less environmental, because it makes them less available to do pro-environmental deeds. Xiao and Hong hypothesize that Chinese women are nowadays too busy for pro-environmental behavior. They likely have a job and also have domestic work to do (Xiao and Hong 2010: 92-3). Working in the public sphere could thus make people more environmental, while the link between environmental concern and the private sphere is unclear.

Some studies argue that women appear more concerned for the environment because they perceive more things as a risk to human health than men do (see Xiao and Hong 2012: 470). Several of the East Asian interviewees thought that being a parent would make women more concerned about the environment. As a main reason they gave the mothers' concern for their children's health. The safety of food, clothes and toys for children's health was seen as an important motivator for women to become environmentally concerned. Japanese interviewee Aiko believes that “[w]omen are more aware of potential harm to and from the environment with regard to bearing and raising babies.”²² This argument echoes the “parental roles hypothesis,” which claims that being a parent has a different effect on men and women, making men less concerned about environmental risks but women more so. Being a parent would make men more aware of their economic concerns rather than environmental ones. However this hypothesis has received mixed results (see Davidson and Freudenburg 1996: 325-6).

21 Interview with Korean teacher. Email interview with author. June 15, 2013.

22 Aiko. Email interview with author. June 7, 2013.

A number of interviewees (from China and Taiwan) think that gender as such is not linked to a pro-environmental attitude, but rather personal habits, one's daily routine, and education. Zhang Jingru, a Chinese consultant, believes that women are less likely to show concern, because they “love beauty,” by which she means physical beauty and the ensuing waste products of make-up etc.²³ Yet several other interviewees emphasized that women would care more than men about the quality of their food and clothes. Especially young women would be concerned about the ingredients of i.e. make-up products, and would rather buy ecologically friendly products. Furthermore, some interviewees from China and Korea mentioned that men are more likely to smoke than women.²⁴ They thought that behaviors like smoking are a reason for the difference in environmental concern between the genders.

Contrary to the expected findings (see 2.4.2), there was no trend in the data with respect to gender influencing environmental concern. Only in China was there a significant difference in concern, with more men showing concern than women. These results are also contrary to most interviewees' statements, who believed that women would be more likely to be environmentalist. One important reason was women's greater likelihood to perceive things as risks to their health and their children's well-being. Interestingly, the majority of Chinese and Taiwanese interviewees did not believe gender would be linked to environmental concern. In Japan and Korea most interviewees thought women would be more concerned. The results from the analysis suggest that gender is not significantly linked to environmental concern in East Asia.

4.4 Exposure to Degradation and Environmental Concern

This section will shine light on whether being exposed to environmental problems such as pollution increases the likelihood that people will be concerned about the environment. Those people who rated at least two out of three local issues (air pollution, water pollution, poor sewage and sanitation) as “rather” or “very serious” form the group that is deemed to be exposed to degradation. Furthermore, in order to check whether the relationship between exposure to environmental degradation and concern for environmental quality is solid, I will also take a look at the people who are not in the “exposed” subset. Those are the people who are considered to be not exposed to environmental threats.

²³ Zhang Jingru. Email interview with author. June 9, 2013.

²⁴ Interview with Korean graduate student. Email interview with author. June 9, 2013; Interview with Chinese business manager. Email interview with author. June 13, 2013.

Table 20: Distribution of exposure and non-exposure to degradation for East Asia

	China		Japan		Korea		Taiwan	
	%	no.	%	no.	%	no.	%	no.
Exposed	33.4	673	46.4	508	46.2	555	32.4	398
Not exposed	66.6	1342	53.6	588	53.8	645	67.6	829
Total respondents		2015		1096		1200		1227

(Data derived from 2005-2008 World Values Survey)

About half of Japanese and Korean respondents rated their local environmental pollution as “somewhat” or “very serious.” In the Chinese and Taiwanese samples, one third of respondents is considered to be exposed to environmental degradation. It is interesting to note that only one out of three Chinese respondents rated their local environment as bad. A reason for this phenomenon could be “shifting baselines of environmental quality,” as Liu and Leiserowitz call it (Liu and Leiserowitz 2009: 41). They also found in surveys carried out in China that a surprising number of respondents rated their environmental quality as good or very good. They hypothesize that people get used to the polluted environment they live in and have no knowledge or experience of a better environment to compare theirs to (ibid.).

In order to see if exposed people are more likely to show environmental concern than unexposed respondents, the ten-item environmental concern factor (see 3.3.1) had to be adapted slightly because exposure relies on three questions that are also used in the concern factor. So instead of using ten items for the concern factor as for all the other points, only the remaining seven were used to test in how far exposure is linked to environmental concern. Prior to doing this, it was ensured that the seven-item factor can be used to evaluate concern similarly to the ten-item factor. Consequently, the threshold was adjusted with the goal that the amount of concern between the seven-item and ten-item concerns be similar. The figure below shows the differences between the two environmental concern factors. We see that in China the amount of concern was matched, but in Japan, Korea and Taiwan there are larger gaps. These gaps reduce the significance of any exposure-related findings for these three countries. However exposure-related findings for China – since they are greater than the 0.7 percent gap between ten-item and seven-item concern – are significant.

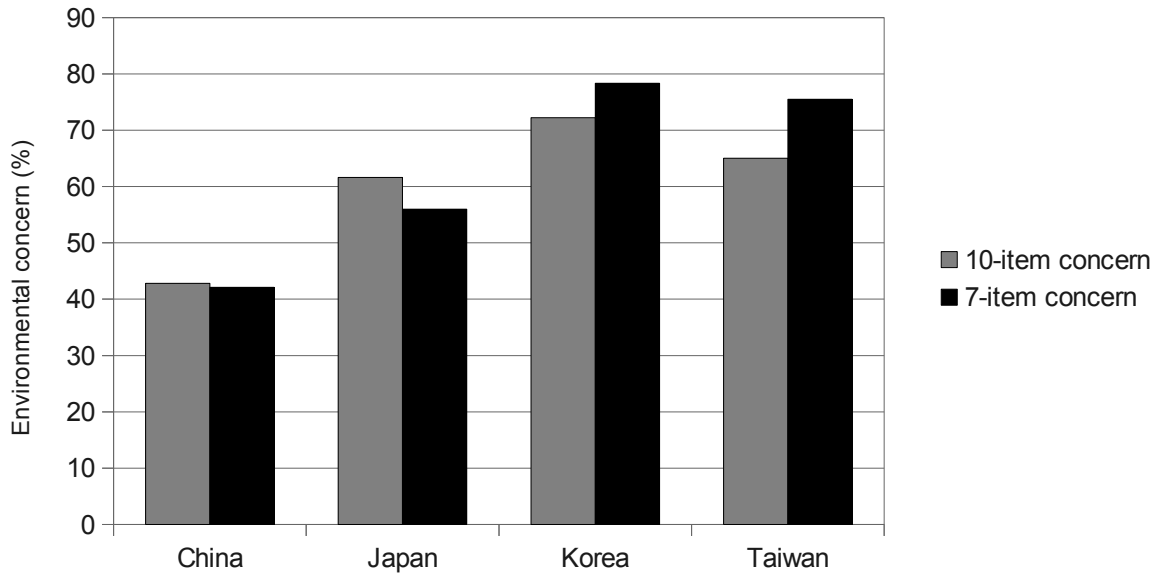


Figure 5: Comparison of ten-item and seven-item concern factor

(Data derived from 2005-2008 World Values Survey)

Below are the results for the environmental concern of the exposed and the not exposed respondents, respectively.

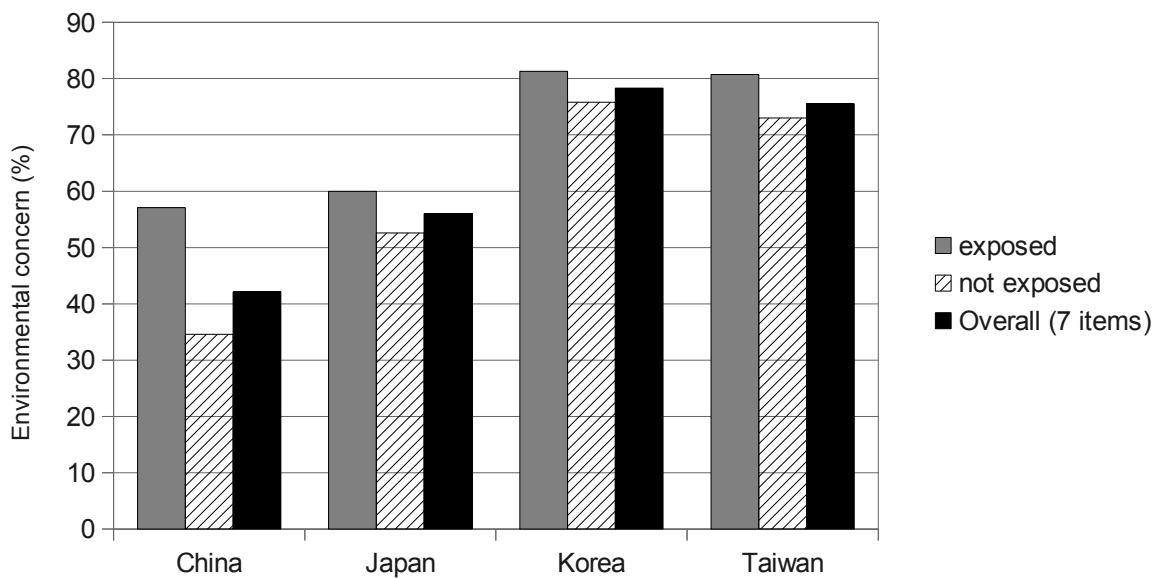


Figure 6: Environmental concern by exposure to degradation

(Data derived from 2005-2008 World Values Survey)

The analysis shows that in China, more respondents who are exposed to environmental degradation show concern than those unexposed. As was just pointed out above, the findings for China are significant because the seven-item and ten-item concern factors match. Although it looks like the trend is similar in the three other countries, these findings are inconclusive. Since the gap between the concern of exposed and unexposed Japanese, Koreans and Taiwanese is not significantly larger than that between the samples' seven-item and ten-item concern factors, exposure is not deemed to influence concern in those samples. In Japan, Korea and Taiwan exposure is thus not considered an indicator for environmental concern. In China however, the degradation hypothesis applies, as those Chinese who are exposed to environmental threats such as poor air or water quality or poor sewage are more likely to be concerned about the environment than those without such exposure.

Although exposure to degradation emerged as an indicator of environmental concern in only a quarter of the samples, most interviewees thought that the experience of pollution plays an important role in the context of environmentalism. The place where people live may be polluted, thus giving them first hand experience of environmental problems. As Inglehart argued, objective environmental problems would affect people in a way that makes them more environmentally concerned (Inglehart 1995). The most important reason why this would be the case is that people fear for their health and safety. Living in a polluted environment is a threat to residents' well-being and life quality. A large number of East Asian interviewees mention human health as a main motivator for pro-environmental actions and concern. When a person's daily life is affected by pollution, then it would be a given that their concern is raised, and that they would work towards improving the environment.²⁵

Several other reasons speak for the validity of the degradation hypothesis. One is the rising number of protests that are triggered by local environmental problems. Japanese NGO worker Aiko is unsure if there is a consistent link, but she believes that “people are most vocal about pollutions [sic] when they are at risk of being exposed to it themselves.”²⁶ Broadbent et al. emphasize how environmental protests in East Asia generally erupt because of local, “site-specific” degradation (Broadbent et al. 2006: 8). They imply that such local protests are an effective way of getting the government to fix the cause of the protests (if it is in the government's power to do so) because the alternative is clamping down on the protesters, which ultimately means risking its legitimacy: “The movements do not demand regime-change. Once the local problem is fixed, the local movement tends to die out.” (ibid.)

25 Interview with Chinese supply chain planner. Email interview with author. June 9, 2013; Li Na. Email interview with author. June 6, 2013.

26 Aiko. Email interview with author. June 7, 2013.

One interviewee, a Taiwanese government official, mentions the impact of the government's attitude to the pollution. People would have more incentive to complain about their local pollution issues if they knew that the government paid attention and wanted to help.²⁷ As for the Chinese public, they historically only actively protested for a better environment when the local surroundings were concerned, according to Economy (2004: 56). She claims that “Damage to public health” features prominently as a reason for Chinese to engage in environmental protests (Economy 2004: 86). Following the logic of the degradation hypothesis, Chinese people should therefore have developed high concern for the environment following the rapid industrialization and the country's consequent severe environmental problems. This may explain why the trend in the analysis is strong in the Chinese sample but not the other three.

Furthermore, with local environmental problems it is somewhat easier to determine who the responsible parties are (i.e. specific factories) than with global problems. Motivating residents to take action collectively may be easier if the local degradation concerns them all in their everyday lives. Local problems are more concrete to the people who are experiencing them than some global issues that are difficult to understand and where it is difficult to assign blame. Therefore, people who are experiencing local pollution might be more concerned about them. Yet it is also possible that local environmental degradation is so severe that concern about it spreads beyond the local site. One such example would be the poor air quality of many Chinese cities, which is increasingly garnering attention beyond the people living there.

If all these reasons supporting the degradation hypothesis are valid, how come exposure does not influence the environmental concern of Japanese, Korean and Taiwanese respondents? The degradation hypothesis suffers limitations for two reasons. First, people need to be aware that their environment is degraded in order to be concerned. But often people are born into these environments and have never known a better air or water quality. These “shifting baselines of environmental quality” hinder their concern (Liu and Leiserowitz 2009: 41). A number of interviewees emphasize that acknowledgment of a polluted environment is a precursor to being concerned, and that people who are constantly exposed to environmental threats become used to them. Sumi Miyoshi, a Japanese business man, points out that some people will blame the poor environmental quality if they become ill, but others will not, even if their environment is equally bad. So he supposes that knowledge about better living circumstances is an important condition for environmental concern from exposure.²⁸

27 Interview with Taiwanese government official. Email interview with author. June 4, 2013.

28 Sumi Miyoshi. Email interview with author. June 5, 2013.

Arguably, only if an individual knows they live in a degraded environment is it possible that they become concerned about the environment because of the exposure.

Another issue with respect to awareness of environmental degradation is the phenomenon that many people are aware of global, but not local problems. Before globalization it was the other way around and people knew about their local environmental problems, but often felt they were alone and isolated with those issues. International meetings such as the 1992 UN Conference on Environment and Development raised the awareness that environmental problems are larger than just local issues. Through increasing interconnectedness beyond local circles, it became apparent that there was a global movement for the protection of the environment. So nowadays it is not uncommon that people are aware of and want to fight issues such as global warming, while at the same time being ignorant of the immediate environmental problems that surround them.

Zhao found that Chinese people tend to be more concerned about global environmental problems than the degradation of their immediate environment. He points out that people often think that environmental degradation is worse the further away they are geographically (Zhao 2012: 154). Gifford et al. explored this “spatial optimism” in 18 nations (including Japan), and found it to be consistent with earlier studies: people judged environmental conditions to be worse the further away they were geographically located (Gifford et al. 2009: 2). Reasons for this phenomenon could be either wanting to keep a “positive self-image” or increased knowledge of global problems through the media (Gifford et al. 2009: 6). But other sources maintain that people are more likely to care about their immediate local problems than global issues (see Cin 2012: 7). Some scholars argue that the further environmental problems are geographically removed from individuals, the less concern those problems would raise. Domestic and local problems would attract people's attention and concern much more than national or global ones (Harris 2006: 8). Harris found in his review of Chinese views of the environment that Chinese had only regard for their very immediate environment (Harris 2006: 8). “In short, Chinese people say that they care about problems that affect them directly in space and time” (ibid.). While these findings are contrary to Zhao's (2012), they are similar to the egoistic value dimension, where people believe they are only affected by things that immediately threaten their own safety or interests.

The second problem with the degradation hypothesis is that even if people realize they are living in an unsafe environment, they may be unable to do anything to improve their situation. It has been shown that socially disadvantaged people tend to live in hazardous and polluted areas (see Lowry 2009: 109). So these people likely have no resources to change what is polluting their surroundings or do not have the education to behave more pro-environmental.

Their inability to improve their situation may be why they lack environmental concern. One interviewee, a Korean English teacher, believes that those living in poor environmental conditions cannot afford to live anywhere else and are thus less likely to be concerned. If they had the means to live somewhere else, they would. Because they cannot, they adjust rather than try to change their environment. People who do have the means, though, would try to improve their living conditions, according to her.²⁹ This statement shows that environmental concern is indeed considered by some a luxury that the poor cannot afford to have. On a similar note two Chinese interviewees speak of hierarchies in human needs. People who can barely afford to feed themselves would be unlikely to be concerned about the polluted environment they may be living in. If those people had enough money, they might move into a healthier environment. But basic problems like food shortage would need to be solved before people's concern for their immediate environment would rise. While China was facing a food shortage 60 years ago, one of the main problems now is food safety.³⁰ Many Chinese who can afford it are therefore fleeing the heavy pollution and moving overseas.³¹

In summary, the analysis showed a positive link between being exposed to a polluted environment and showing concern only for China. The concern of the Japanese, Korean and Taiwanese samples was not influenced by exposure. As for the interviewees' opinions, most believed that exposure to pollution would raise people's environmental concern. The majority claimed this was for health reasons. Several Chinese believed that people would get used to their degraded environment and thus not be concerned, although this is not reflected in the analysis results. Some Korean interviewees believed that exposed people are less likely to be concerned, either because they lack awareness or because they cannot afford to move away.

4.5 Social Class and Environmental Concern

It was pointed out in section 4.4 that socially disadvantaged people often have to live in polluted environments, because they have no means of living in safer surroundings. In order to check what relationship exists between social class and environmental concern, the three factors “education,” “income” and “subjective social class” are dealt with in this section. The self-ascribed social class item is included because Inglehart points out that it is “one's subjective sense of security” rather than the actual level of income that accounts for postmaterial values in an individual (Inglehart 2000: 221). Since postmaterialism is closely

29 Interview with Korean English teacher. Email interview with author. June 2, 2013.

30 Quan Ge. Email interview with author. May 29, 2013; Yang Li. Email interview with author. June 3, 2013.

31 Interview with Chinese investment banker. Email interview with author. May 30, 2013.

linked to these factors, it follows in the next section (4.6).

4.5.1 Education and Environmental Concern

Table 21: Education distribution of the WVS samples for East Asia

	China		Japan		Korea		Taiwan	
	%	no.	%	no.	%	no.	%	no.
Lower education	52.3	1041	8.2	88	7.8	93	21.3	261
Middle education	41.4	823	64.8	695	38.9	467	39.2	481
Higher education	6.3	126	26.9	289	53.3	640	39.5	485
Total*		1990		1072		1200		1227

* Total numbers for China and Japan do not add up to sample size because of "No answer" or "Don't know".

(Source: 2005-2008 World Values Survey)

The education levels are very unevenly distributed in the different countries and across them. In China, only a very small part of respondents has a higher education as defined in section 3.3.5. In Korea it is the other way around, with the fewest respondents having lower education. In Taiwan people from the middle and higher education levels are very even. In Japan, almost two thirds of respondents have a middle level education. The small sizes of the highly educated Chinese and those Japanese and Koreans with a lower education should be considered when interpreting the following results.

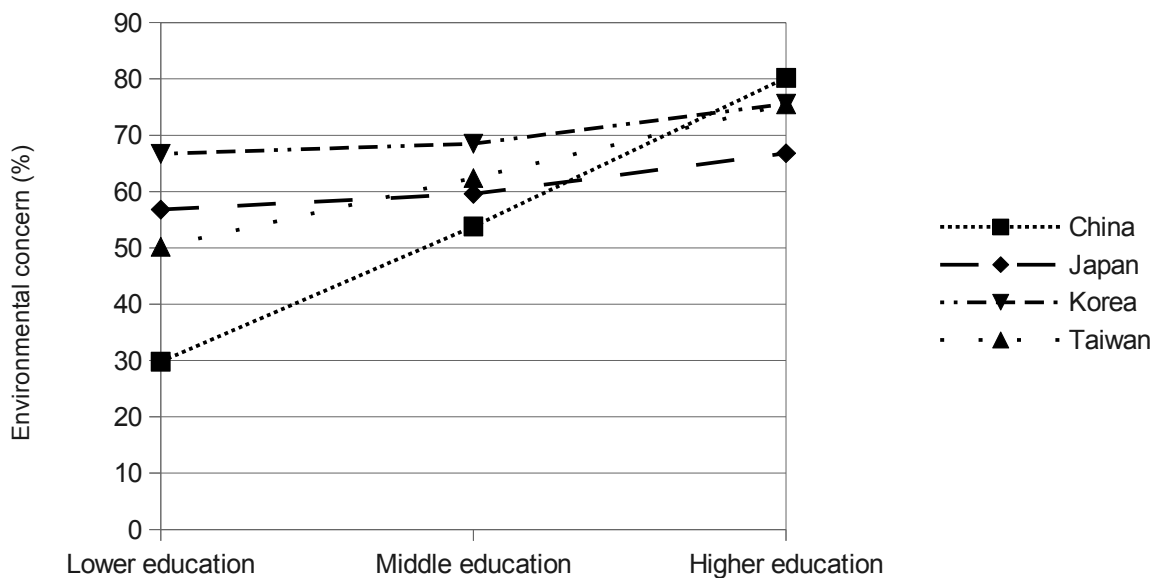


Figure 7: Environmental concern by education level

(Data derived from 2005-2008 World Values Survey)

The analysis shows that all four countries show a similar trend with respect to education and environmental concern. The higher the education level, the more people are concerned. This trend is most pronounced in China, followed by Taiwan. There is only a small rise of environmental concern between Japanese and Korean respondents with lower and middle level education.

Table 22: Environmental concern of East Asians by education level

	China		Japan		Korea		Taiwan	
	%	no.	%	no.	%	no.	%	no.
Lower education	29.8	310	56.8	50	66.7	62	50.2	131
Middle education	53.8	443	59.6	414	68.5	320	62.4	300
Higher education	80.2	101	66.8	193	75.6	484	75.5	366
Overall concern	42.8	862	61.6	675	72.2	866	65.0	798

(Data derived from 2005-2008 World Values Survey)

It is evident from the results in table 22 that Chinese with a lower education are 13 percent less likely to be concerned than the national average (overall concern). The other two education groups are 11 percent and 37.4 percent above that average. The numbers are not as pronounced for Japan and Korea, and in their cases only those with a higher education are above the national average. This is similar in Taiwan, but here those with a lower education are almost 15 percent below the national average, while the higher educated Taiwanese are 10.5% more likely to show environmental concern than all Taiwanese together.

These findings correspond to the assumptions of the social class hypothesis, which states that higher classes are more likely to be pro-environmental than lower classes. There are several explanations why education would be positively correlated with environmental concern.

First of all, education gives people access to knowledge and exposes them to information. Specific education about ecological issues “grants a systematic and scientific set of knowledge of the environmental science,” as one Chinese interviewee points out: People would need to learn how their actions influence their environment, and how to help protect it.³² But according to some of the interviewees, this is often left out in environmental education. Another Chinese interviewee says she remembers learning about China's environmental problems in geography class, but the link between people's daily actions and those problems was not covered well.³³ Although environmental issues are discussed in school, the impact of people's behavior on the environment seems to be covered less. One

³² Interview with Chinese management consultant. Email interview with author. June 6, 2013.

³³ Interview with Chinese management accountant. Email interview with author. June 1, 2013.

Korean interviewee offers her viewpoint on that problem. She believes that although Koreans learn about environmental issues throughout their formal education, pro-environmental actions are better taught through experience, such as recycling, which she says is “part of our lifestyle.”³⁴ One Japanese interviewee claims that the Japanese government tries not to mention the nation's environmental problems too much, which is why formal education about such issues is lacking in Japan.³⁵ Taiwanese interviewees on the other hand expressed their contentment with environmental education in Taiwan. Several of them emphasized that Taiwanese schools are trying hard to educate students that environmental protection is very important. They agree that education is crucial because young people spend a lot of time at school and get their knowledge from there.

No matter whether environmental issues are covered well in school or not, even a general formal education has an effect on people and makes them more aware. General education allows for access to more information, which enables a greater awareness. One Taiwanese student emphasizes that education does make people more knowledgeable about the environment, but that that does not necessarily make them more concerned.³⁶ This brings us to the second reason why education could increase a person's concern for the environment. Education raises a person's “ability to appreciate complex problems and his/her opportunities to access information about the environment” (Wong and Wan 2011: 238). Education is thus a precursor for critical thinking. It follows that educated people not only have the means to access information related to the environment but are also able to process it into a broader understanding of interrelationships. Several interviewees complain that the education systems in China and Japan are focused on learning things by heart rather than learning critical thinking. Japanese interviewee Aiko believes that in Japan, the formal education is poorly linked with environmental concern because specific education about ecological issues is missing from the curriculum:

I believe it's due to both the formal curriculum that requires a lot to be taught in limited time slots, and the teachers who lack experiences with the natural environment and issues around it [...]. So, I can say that formal education leads students not to pay attention to environmental concern but to worry about memorizing specific terms just for passing exams.³⁷

Barrett, Kuroda and Miyamoto argue likewise: They deduct from their study of Japanese students that they are encouraged to memorize instead of understand environmental concepts (Barrett, Kuroda and Miyamoto 2002: 250-2). Consequently, the question is in how far the

³⁴ Interview with Korean student. Email interview with author. June 7, 2013.

³⁵ Nakano Masashi. Email interview with author. May 31, 2013.

³⁶ Interview with Taiwanese 19-year-old male student. Email interview with author. June 12, 2013.

³⁷ Aiko. Email interview with author. June 7, 2013.

argument that education encourages critical thinking applies in East Asian countries. One Chinese interviewee raises an interesting point with respect to this question. He believes that less educated people may be unaware or less aware of the danger of pollution and other environmental problems. But, he claims, people who know that something is dangerous without understanding the underlying causes and the extent of the danger are likely to be very concerned. He believes that educated people are more rational in dealing with threats such as environmental problems. So according to him, education would rather be negatively related to environmental concern, or in a reversed U-shaped curve.³⁸ Although this trend is not seen in the data, it is an intriguing argument.

Third, education helps transport a worldview. Gelissen talks of the “enlightenment hypothesis” and says that through education, people are introduced to certain values such as “commitment to the common good,” which includes the environment (Gelissen 2007: 399-400). Education helps transport the modern focus on reason and scientific knowledge about the importance of the relationship between humans and nature. Some of the interviewees mentioned that education helps people develop different perspectives and an altruistic mindset. One Chinese interviewee believes that educated people are more likely to emphasize that sustainable development is important. She also thinks that people with a formal education are aware of environmental threats earlier because they tend to “have better access to the public media.”³⁹

In addition, a higher education increases the chances of finding a better-paid job than no education. This in turn means that educated people might be more likely to show more willingness to sacrifice for the protection of the environment, or at least have the means to afford environmental concern, if such is seen as a luxury. It will be shown in 4.5.2 whether this is actually the case in East Asia or whether respondents' answers show no link between income and concern.

Finally, education enables people to incite social change (Arnocky and Stroink 2011: 139). Several interviewees talk about primary school education and that it is important to instill in young people a sense of environmentalism. A Taiwanese government official believes that the earlier people are educated about environmental issues, the more visible the effect will be.⁴⁰ The findings from the analysis show that more younger East Asians are environmentally concerned than older people (see 4.2). It may thus be assumed that since the emergence of environmental movements in East Asia, there have already been changes for better awareness and education about ecological issues. If this trend continues, the potential for social and

38 Yang Guangdi. Email interview with author. June 9, 2013.

39 Interview with Chinese supply chain planner. Email interview with author. June 9, 2013.

40 Interview with government official. Email interview with author. June 4, 2013.

environmental change is likely to increase, possibly benefiting entire societies.

To sum up, the analysis showed a positive link between education level and environmental concern for East Asia. Reasons for this are thought to be access to knowledge, the development of a critical mind and a specific worldview, and the better chance of finding a well-paying job. Most Chinese, Taiwanese and Korean interviewees agree that a formal education is a crucial factor for a pro-environmental attitude. In contrast, most Japanese interviewees believed that education plays no big role with respect to environmental concern.

4.5.2 Income and Environmental Concern

Table 23: Income distribution of the WVS samples for East Asia

	China		Japan		Korea		Taiwan	
	%	no.	%	no.	%	no.	%	no.
Lower income	43.4	694	42.1	421	21.5	257	29.7	363
Middle income	53.9	862	37.5	375	72.8	782	67.1	820
Higher income	2.7	43	20.4	204	5.8	69	3.2	39
Total*		1599		1000		1198		1222

* Total numbers do not add up to sample size because of "No answer" or "Don't know".

(Source: 2005-2008 World Values Survey)

As can be seen in table 23, only very few Chinese, Koreans and Taiwanese rated their income as high. In Korea and Taiwan, more than two thirds of respondents have a middle income, and slightly more than half of Chinese respondents. In the Japanese sample, a fifth of respondents rated their income as high, and two fifths as low. About 20 percent of Chinese respondents did not answer the income question, compared with about nine percent of Japanese and less than one percent of Koreans and Taiwanese.

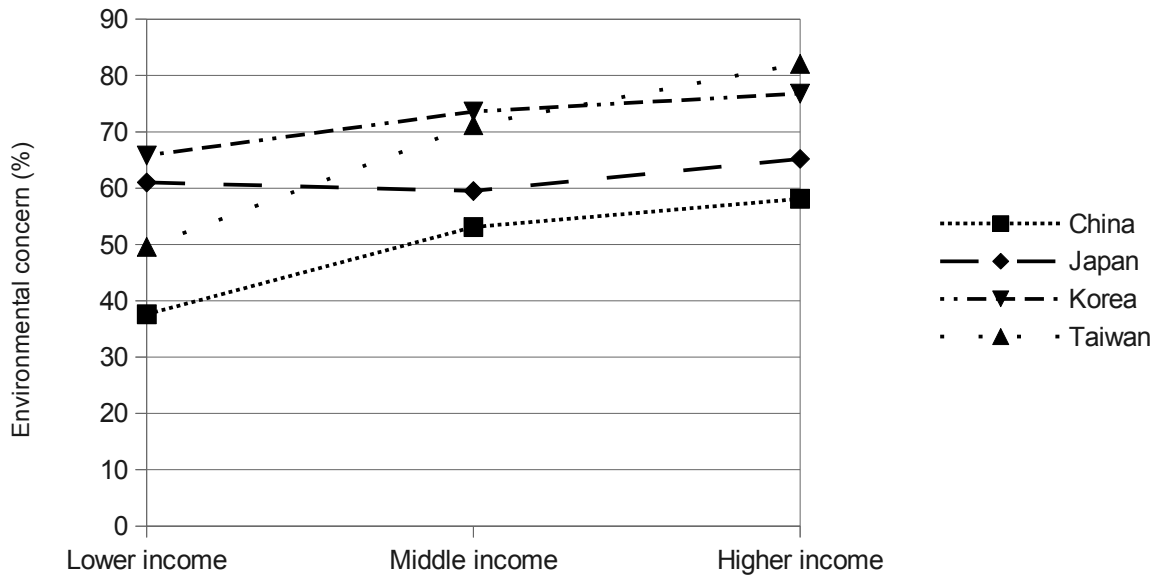


Figure 8: Environmental concern by income level

(Data derived from 2005-2008 World Values Survey)

The analysis shows that in all countries but Japan, environmental concern rises with income, although in Korea only marginally. In Japan, the difference in concern of people with a lower and middle income is negligible. There is a strong positive correlation between income and environmental concern in the Chinese and Taiwanese samples. It is noticeable that the strongest increase in concern happens from low to middle income. Table 24 contains the data with the findings that figure 8 is based on.

Table 24: Environmental concern of East Asians by income level

	China		Japan		Korea		Taiwan	
	%	no.	%	no.	%	no.	%	no.
Lower income	37.6	261	61.0	257	65.8	169	49.6	180
Middle income	53.1	458	59.5	223	73.6	642	71.2	584
Higher income	58.1	25	65.2	133	76.8	53	82.1	32
Overall concern	42.8	862	61.6	675	72.2	866	65.0	798

(Data derived from 2005-2008 World Values Survey)

Split up into the three income groups, we see that Chinese with a lower income show less concern than the other two groups with middle and higher income. Chinese with a lower income are 5 percent less likely to be concerned about environmental issues than the national average (overall concern). The positive correlation with the middle and higher income group is stronger, with 10.3 and 15.3 percent. Having a lower income does not influence Japanese

people's concern. Even the middle and higher income Japanese respondents' concern is close to the national average. A lower income makes Koreans' concern fall 6.4 percent below the national average, but having a middle or higher income only slightly influences concern positively. The differences are more pronounced in Taiwan, where people with a lower income are 15.4 percent less likely to be concerned than the national average. Taiwanese with a middle income are more likely to be concerned, and those with a higher income are 17.1 percent more likely to show concern than the average Taiwanese respondent.

The findings for China, Korea and Taiwan correspond with the notion that a higher income would predict environmental concern. What are the possible reasons for this phenomenon?

First, a higher income means more freedom in terms of money to pursue your individual goals. Having money makes it easier to behave pro-environmental, if doing so means having to pay more. Many of the interviewees agreed with this argument. A Japanese restaurant employee believes that people who have more financial means are able to act more pro-environmental by making their cars or houses more ecologically sound.⁴¹ But here the difference between concern and actions becomes apparent. Japanese NGO employee Aiko points out that “someone may be highly concerned but cannot afford shopping ethical/organic stuff all the time.”⁴² This point was supported by other interviewees. A Korean teacher claims that people with a low income cannot afford to buy ecologically friendly products, but would rather shop for cheap goods. She claims that high income people tend to “support environmental causes because it makes them look good” and because they have the financial means.⁴³ This claim highlights another possible reason why higher income people might be more likely to care about environmental quality than those with a lower income: positive peer pressure.

High income is linked to a good education and a good social standing. Showing concern for environmental problems could be a trend among high income people. Because they can afford to, affluent citizens are able to choose their environment and make sure their life quality does not suffer. One Chinese interviewee sees income linked with environmental concern in that those Chinese who can afford it move out of the country to escape the heavy pollution.⁴⁴ Overall, however, many interviewees showed a negative view of high income people and doubted that they would be more pro-environmental than those with a lower income. Very affluent people are believed to behave most damaging to the environment or waste resources and goods because they take them for granted. Moreover many

41 Yui Nakanishi. Email interview with author. June 2, 2013.

42 Aiko. Email interview with author. June 7, 2013.

43 Interview with Korean teacher. Email interview with author. June 15, 2013.

44 Interview with Chinese investment banker. Email interview with author. May 30, 2013.

businesspeople would exploit the environmentalist debate to make money. According to a Taiwanese government official, many wealthy people believe environmental problems are the responsibility of the government, so they remain passive and complacent in the face of environmental degradation.⁴⁵ They would defer responsibility to the authorities rather than become active themselves. Several interviewees believe that poorer people are more likely to behave pro-environmental, as they depend on such actions economically. Poor people would rather save things like food and bags, and be more likely to recycle. However it is possible that this is done for economic reasons and not because they people have more concern for the environment than wealthier people. This might explain why everywhere but in the Japanese sample there is a relatively sharp increase in concern between lower and middle income.

While most interviewees thought that income would be positively related to environmental concern, a number of them believed that middle-income people, who earn enough to be able to live comfortably, would be most likely to care about environmental quality. Poor people would be too busy with survival and “rich people own too many resources.”⁴⁶ According to a Chinese engineer, the relationship between income and environmental concern describes an S-shape: “the intermediate region has the best marginal influence increase.” But he concedes that the national wealth is more important than individual wealth in this respect.⁴⁷ Economic development does not only lead to increased wealth in a society, but also a better education system, the emergence of new values (Inglehart 1990) and access to technologies that do not harm the environment (Economy 2004: 11). It is therefore plausible that people from a society that is on an intermediate development level are more likely to be concerned than those from an economically underdeveloped society or one that is very highly developed, because the former is occupied with survival and the latter might already have a sound environmental protection apparatus in place.

Overall income was found to be positively correlated with environmental concern, except for Japan where it had barely any influence. Interviewees' opinions were very divided. Many believed that a high income would motivate people to behave pro-environmental because they have more freedom to dedicate to environmentalism. Moreover positive peer pressure would play a part. However many interviewees doubted there would be a consistent link. Some others argued that lower- or middle-income individuals are most likely to show concern because they would be more conscious about not wasting resources.

45 Interview with Taiwanese government official. Email interview with author. June 4, 2013.

46 Interview with 19-year-old male Taiwanese student. Email interview with author. June 12, 2013.

47 Quan Ge. Email interview with author. May 29, 2013.

4.5.3 Subjective Social Class and Environmental Concern

Table 25: Subjective social class distribution of the WVS samples for East Asia

	China		Japan		Korea		Taiwan	
	%	no.	%	no.	%	no.	%	no.
Lower/working class	51.4	936	38.6	406	21.4	257	37.5	457
Middle class	48.0	875	60.5	636	77.9	934	61.9	756
Upper class	0.6	11	0.9	9	0.7	8	0.6	7
Total*		1822		1051		1199		1220

* Total numbers do not add up to sample size because of "No answer" or "Don't know".

(Source: 2005-2008 World Values Survey)

In all four countries, only very few people considered themselves as belonging to the upper class (see table 25). This renders the results for upper class people's environmental concern unrepresentative. Only in China did more respondents classify themselves as belonging to the lower/working class than middle class. About ten percent of Chinese did not answer the social class question, compared to four percent of Japanese and less than one percent of Koreans and Taiwanese.

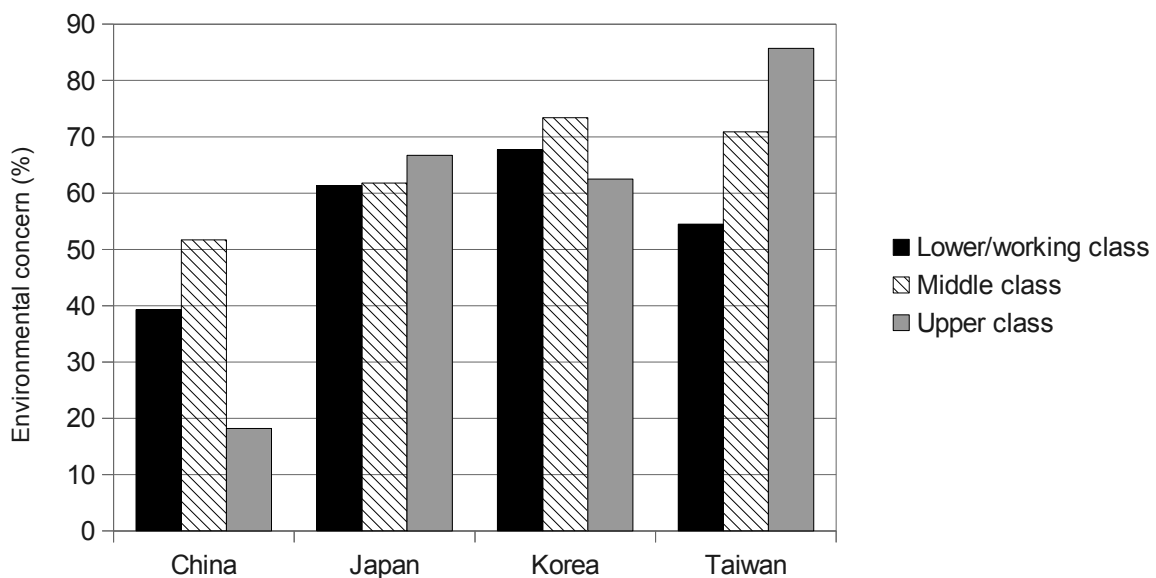


Figure 9: Environmental concern by social class

(Data derived from 2005-2008 World Values Survey)

As for the link between subjective social class and environmental concern, the results differ across the samples. Chinese middle class respondents are most likely to show concern, while

in Taiwan concern rises with class. Since the upper class groups are not representative, though, the significance of these findings is questionable. The Japanese and Korean samples are not affected by subjective social class.

The interviewees' perceptions with regard to social class echoed their views on the link between income and concern. One important point that was made by many interviewees was that the different social classes have different ways of showing environmental concern. The upper class, having most financial means, could raise funds to protect the environment. They are believed to have the most power, as they “can determine the culture of the society and the life condition of lower class people” because they control the government, the media and the Internet.⁴⁸ A Chinese college student criticizes that lower or middle class Chinese lack arenas to voice their concerns or are not taken seriously. She is confident, though, that social networks and their growing influence on daily life will improve this situation.⁴⁹ The middle class has social capital that can help them influence the government through campaigns or protests, and middle class people would be able to influence their friends too. The lower classes would do their share of protecting environmental quality by being thrifty and using resources economically because they only have limited resources. However, as mentioned above, it is difficult to say whether poor people who save things do this because they are concerned about the environment or, more likely, to save money. On the other hand, many lower class people are seen as too preoccupied with survival to care about the environment. As many (especially Chinese) interviewees emphasize, when hunger and survival dictate one's life, there is little room for environmental concern. Although it is granted that environmental concern is a luxury that many people cannot afford to have, a negative image of higher social classes or at least affluent East Asians emerged in the interviews, because they would only try to maximize their own benefit or that of their loved ones. These views correspond to the findings of the analysis for China, where fewer respondents of the lower and upper classes showed concern than the middle class.

Several reasons were mentioned in the interviews why middle class people would be likelier to care about the environment than lower and upper classes. A Chinese business manager believes that people of the middle class are likely to be most aware of environmental problems and they have the power to behave environmentally friendly. She thinks that upper class people may think they are most concerned but that those people also contribute the most to environmental destruction.⁵⁰ Rich people are seen as rather egoistic and driven by a greed for profit, which would decrease their concern for environmental problems.

48 Interview with Chinese management accountant. Email interview with author. June 1, 2013.

49 Huai Bichen. Email interview with author. May 31, 2013.

50 Interview with Chinese business manager. Email interview with author. June 13, 2013.

Another reason why the middle class is more likely concerned than the lower or upper classes is because it is “in.” A Taiwanese assistant researcher at the National Taiwan University claims it is fashionable in Taiwan to be pro-environmental. She agrees that lower classes act pro-environmental only for economic reasons, and claims that the upper classes are unconcerned.⁵¹ A Korean university student also believes that the middle class is most likely to act pro-environmental. They would recycle, carry shopping bags, and not drive their cars on designated days.⁵² It seems that positive peer pressure is seen as a significant factor that accounts for people's pro-environmental behavior.

Yet many studies oppose the claim that social class and environmental concern are directly linked, pointing out that the lower classes often (have to) live in hazardous environments, which would raise their awareness and concern for environmental issues. One Taiwanese interviewee believes that social class and environmental concern are negatively correlated: lower classes are more likely to be concerned, because those are the people who are active in environmental groups. Having only little money would make them more conscious of saving and wasting things. She thinks that environmental consciousness is rising in upper class Taiwanese, but that selfishness is still prevalent among them.⁵³ This opinion is contrary to the results from the analysis, where class was positively associated with concern in Taiwan.

In sum, the subjective social class findings are questionable because of the very small upper class samples. However, social class seems to be positively linked to environmental concern in Taiwan. In China, concern was most prevalent in the middle class. There was no correlation between social class and concern in Japan and Korea. Reasons for these trends echoed mostly those already mentioned with respect to income.

To conclude the overall findings for social class, the analysis showed that the level of formal education is positively related to environmental concern in East Asia. Similarly, a higher income also predicts environmental concern in the Chinese, Korean and Taiwanese samples. In Japan, income hardly influences environmental concern. Subjective social class was found to have an influence only in the Chinese and Taiwanese samples, but even these findings are questionable as only very few people identified as upper class.

As for the interviewees' responses concerning social class, a formal education was widely seen to be a crucial factor with respect to a pro-environmental attitude. Interviewees' opinions about the link of income and environmental concern were more divided. Overall many

51 Yixian Z. Email interview with author. May 31, 2013.

52 Interview with Korean student. Email interview with author. June 7, 2013.

53 Interview with female Taiwanese student. Email interview with author. June 6, 2013.

thought that the upper class would likely be environmentally concerned as they tend to have a pro-environmental mindset, financial freedom and potentially find it fashionable to behave environmentally friendly. However several interviewees had a more negative view of the upper class. They claim that the middle or lower classes would be more aware of pro-environmental actions because they rely on them economically and because they are more exposed to them in their daily life.

4.6 Postmaterialism and Environmental Concern

Table 26: Postmaterialism distribution of the WVS samples for East Asia

	China		Japan		Korea		Taiwan	
	%	no.	%	no.	%	no.	%	no.
Materialists	86.2	1205	62.1	558	73.8	881	89.3	1088
Postmaterialists	13.8	193	37.9	341	26.2	312	10.7	130
Total	69.4	1398	82.0	899	99.4	1193	99.3	1218

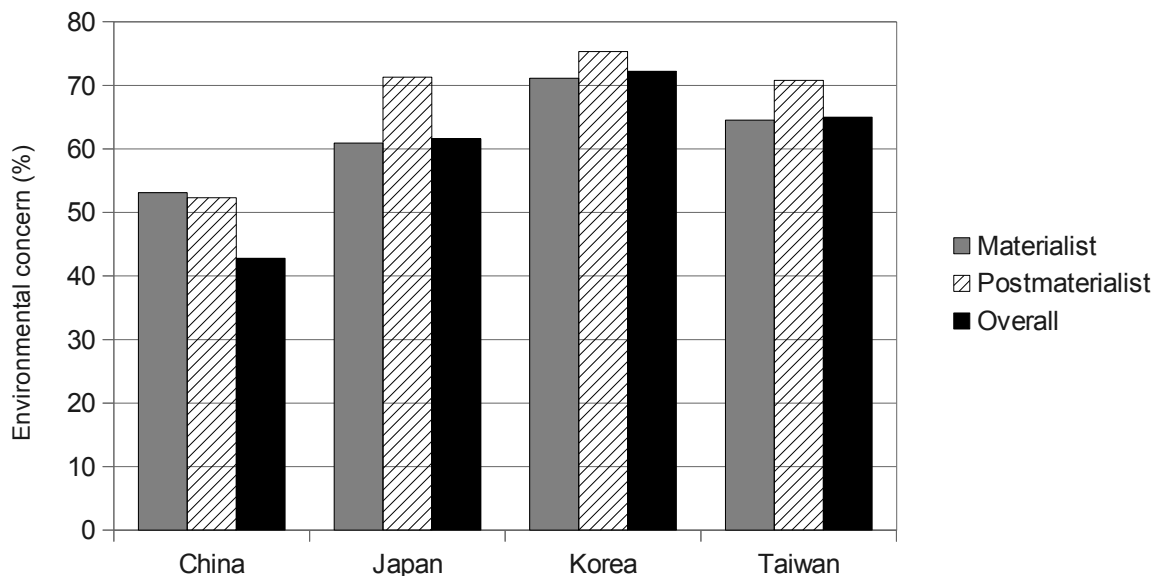
(Source: 2005-2008 World Values Survey)

Table 26 shows the distribution of materialists versus postmaterialists in East Asia. In all four samples, the materialists outweigh postmaterialists. This is especially the case in Taiwan and China. In Japan there are about two thirds materialists versus one third postmaterialists, and in Korea three quarters versus one.

Inglehart supported the hypothesis that environmental concern is more prevalent in higher social classes than lower ones. He claimed that environmental concern is part of a general value shift accompanying postmaterialism, which comes with the shift from an industrialized to a postindustrialized society. He claims that these changes occur through the span of generations (Inglehart 1995). So as children grow up without having to worry about their economic security, they would emphasize postmaterial values such as environmental quality. Japan was the first East Asian country to start industrializing its economy, and Korea and Taiwan followed soon after. According to Inglehart, postindustrial societies would have citizens with postmaterial values. In the Japanese and Korean samples, the numbers of postmaterialists are indeed higher than in China and Taiwan. The finding for Taiwan is interesting, because it industrialized before China but the Taiwanese sample has more materialists. As value changes are claimed to happen generationally (Inglehart 1995), it might take more time for Taiwanese people's values to become postmaterial. It seems reasonable to assume that as a society becomes wealthier through industrialization, its citizens slowly adapt

and their values change. It is likely that before postmaterial values emerge, one or several generations of people will enjoy their materialist lifestyle.

Let us now consider what percentage of East Asian materialists and postmaterialists showed environmental concern.



(Data derived from 2005-2008 World Values Survey)

As figure 10 shows, the postmaterialism theory seems to hold up everywhere but China, where there is little correlation between postmaterialism or materialism and environmental concern. The Japanese sample has the most notable positive correlation between being postmaterialist and showing concern. The concern of Japanese materialists is almost exactly as high as Japanese overall concern. Similarly, Taiwanese respondents showed a positive correlation between being postmaterialist and being concerned about the environment, while there is no link between materialism and concern. The Korean sample shows a similar trend. Materialists' concern is slightly lower than Korean overall concern, and the concern of postmaterialists slightly higher.

Out of the Chinese respondents, only 69.4 percent chose to answer the two questions (V71, V72) that are the basis for the postmaterialism index. In Japan it was 82 percent, compared to 99 percent of both Korean and Taiwanese respondents (see table 26). This is why the materialists and postmaterialists for each sample add up to more than the overall concern for each sample.

There seems to be a steady trend in the East Asian samples that postmaterialists express slightly higher concern, but the concern is strong even among materialists. This means that the respondents who did not answer the relevant questions (V71, V72) have low environmental concern. It is unclear whether this is an artifact of the survey (interviewer gave up too easily, questions were worded weirdly etc.) or a real trend. It could be that the translation was not clear to Chinese and Japanese respondents or that the wording was too complicated for many respondents to feel confident answering them.

In short, the analysis shows that there is a slight positive link between being postmaterialist and showing environmental concern in the Japanese, Korean and Taiwanese samples. Such a link is nonexistent in the Chinese sample.

There is agreement in many studies that environmental concern is a privilege that higher social classes enjoy and which is not linked to lower classes. This view echoes Maslow's (1970) hierarchy of needs theory and claims that the lower classes only pursue goals that help their survival, such as access to food and shelter. This view was supported by the answers of several interviewees in the questionnaire. Some Chinese mention that people from the upper class are more likely to show concern because their lower level needs are already taken care of. These lower level needs include food, shelter, education and health care. Chinese school counselor Yang Li asks, "If [Chinese people] cannot solve these basic social problems, how can they have the energy to give concerns to environmental protection?" He argues that China's basic problems such as providing food for the hungry need to be overcome before environmental concern will become a widespread issue.⁵⁴ Similarly, Quan Ge, a Chinese engineer, speaks of hierarchies in human needs and explains that people who can barely afford to feed themselves are unlikely to be concerned about the polluted environment they may be living in. He concedes that if those people had enough money, they might move into a cleaner environment.⁵⁵

One Chinese interviewee claims that lower class people like the Chinese coal miners have to work in jobs that compromise their health because they have no other ways to earn money. People whose daily life is a struggle for survival do not care about environmental quality, he believes.⁵⁶ Another Chinese interviewee voices similar perceptions. She sees environmental concern as a luxury because of the harsh competition that comes from the abundance of available people. Because many Chinese spend most of their time working for a low income, or working unpaid overtime, they have hardly any resources left to dedicate to environmentalism. She emphasizes that the average Chinese citizen must obey "biased rules"

⁵⁴ Yang Li. Email interview with author. June 3, 2013.

⁵⁵ Quan Ge. Email interview with author. May 29, 2013.

⁵⁶ Yang Guangdi. Email interview with author. June 9, 2013.

and live with the daily risks of unsafe food and environmental pollution. People would lack power, financial means, and efficient channels to voice their concern.⁵⁷ Overall, these views correspond to the basic claims of the postmaterialism theory, as environmental concern is believed to be a higher need that only the well-off can indulge in.

In sum, the postmaterialism hypothesis seems to hold up in all East Asian samples but the Chinese one. The analysis showed that more Japanese, Korean and Taiwanese postmaterialists showed concern than materialists. A number of interviewees mentioned a hierarchy of needs and that they deem environmental concern to be a luxury, as it is claimed in the postmaterialism theory.

4.7 Libertarianism vs Authoritarianism and Environmental Concern

China, Japan, South Korea and Taiwan are all influenced by Confucian traditions. Confucianism is a social norm codex with a strong tradition of respect for authority figures and family structures. Confucianism plays a role in the “Asian values,” a term coined by the Singaporean politician Lee Kuan Yew to explain the cultural differences between Asia and Western countries. He claimed that East Asian culture had some distinct features which form the basis for the region's singular pattern of development. In this model, the emphasis on deference to authority figures and collectivism instead of individualism make up an alternative model to Western liberalism (Dalton and Ong 2005: 211). Proponents of the Asian Values model argue that Confucianism has made East Asian societies accepting of paternalistic, hierarchic authority. Order and consensus are valued because the focus of the society is not the individual, but the community (Dalton and Ong 2005: 212). However, in recent years social change has started restructuring East Asian lives and values. Economic development, the rise of the middle class and the advent of the Internet have all played a part in this social change. As a result, many citizens are starting to question the authority of their governments and official representatives, and are increasingly embracing Western forms of libertarianism (Flanagan and Lee 2000). Moreover, individualism is replacing collectivism in many areas of society, as more people are able to afford a lifestyle of their own choosing.

Based on these considerations, the aim here is to find out whether an authoritarian or libertarian mindset influences environmental concern among East Asians. Table 27 shows how many East Asian respondents of the WVS are deemed libertarian and authoritarian by the standards set down in section 3.3.7.

⁵⁷ Interview with Chinese management accountant. Email interview with author. June 1, 2013.

Table 27: Distribution of libertarians vs authoritarians of the WVS samples for East Asia

	China		Japan		Korea		Taiwan	
	%	no.	%	no.	%	no.	%	no.
Libertarian	4.6	93	32.1	352	12.3	148	13.8	169
Authoritarian	13.2	265	1.2	13	9.5	114	19.7	242
People in both sets	0.1	3	0	0	0.4	5	0.2	3
Total*		358 (2015)		365 (1096)		262 (1200)		411 (1227)

*The reason these do not add up to 100 percent is that only those respondents who answered the questions as laid out in the libertarian and authoritarian factors (see 3.3.7) form the sample here.

(Data derived from 2005-2008 World Values Survey)

The samples produced by the criteria employed for this analysis turned out to be too small to form the basis for any arguments. Table 27 shows that only very few people answered all questions that make up the two factors. In China and Taiwan, authoritarians outweigh libertarians. The opposite is true for Japan and Korea, although the distribution is comparatively even in Korea. Although the samples of libertarians and authoritarians turned out to be too small to have any significance, the results from the analysis and the questionnaire are laid out below.

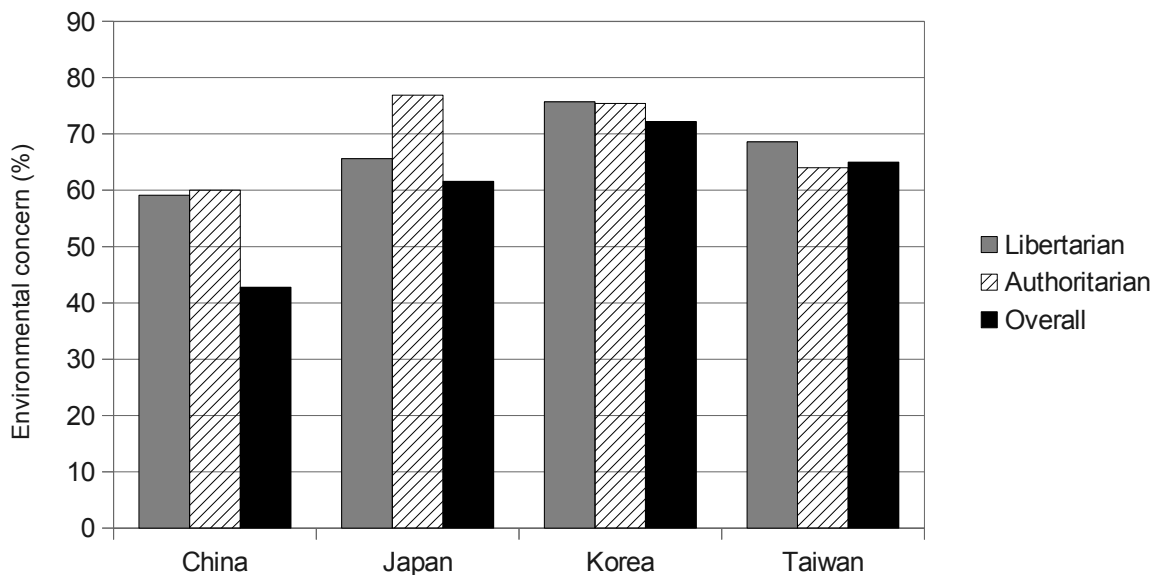


Figure 11: Environmental concern of libertarians and authoritarians compared

(Data derived from 2005-2008 World Values Survey)

Interestingly, those respondents who answered the relevant questions and were classified as either libertarian or authoritarian also show a large amount of environmental concern. Everywhere but Taiwan both libertarians and authoritarians score higher than the overall amount of concern. The reason this is possible lies in the way libertarianism and authoritarianism are conceptualized in this paper (see 3.3.7). Only those respondents who answered the relevant questions form the “libertarian” or “authoritarian” subset. Therefore, not everyone in the whole sample of one country is in either one or the other subset. This is also the reason why some people are part of both subsets (see table 27). The respondents who are in either set are thus more likely to show concern than those who are not deemed libertarian or authoritarian. Taiwan is the only one that breaks the trend as the authoritarians' concern is a little lower than overall concern.

Similar to the findings for postmaterialism, it seems that people who answered the relevant questions are the same respondents who show environmental concern. As pointed out in section 4.6, formal reasons could be the reason for this phenomenon.

The analysis, which is based on very small samples, shows that both East Asian libertarians and authoritarians have high concern for the environment. What are the reasons why libertarianism and authoritarianism would both be linked to an individual's concern for environmental quality?

For libertarians the freedom of all people is important. Since a poor environment is detrimental for all those who are exposed to it, one could assume that libertarians would show concern and try to improve the environment to ensure that everyone is free from harm. As freedom includes being able to live in a good environment, most interviewees agreed that libertarianism would positively influence environmental concern. People who are free to discuss and promote such concern would be able to accelerate improving the environment and its protection. The freedom to exchange ideas and complain about problems is a central topic for the interviewees, and one that several Chinese interviewees feel is lacking in their country. One of them thinks that libertarianism plays a role with respect to “the dissemination of information. If everyone feels free and has the right to freely disseminate information of the environmental problems, more people can be aware of our current situation so that more pressure can be put on the authority to take actions.”⁵⁸ Similarly, one Taiwanese student thinks that libertarians like having control over their own lives, which includes living in a good environment. People living under authoritarian rule might be hesitant to complain about environmental degradation. In a libertarian system, citizens are freer to voice their concerns. This point is a crucial reason why libertarians would be more likely to show environmental

⁵⁸ Interview with Chinese supply chain planner. Email interview with author. June 9, 2013.

concern, according to her. “[I]f they know their behaviors are influential and the government would listen to their opinions and thoughts, people would definitely be more active in environmental issues.”⁵⁹

Second, libertarians might feel that improving the environment is up to themselves instead of some higher institution or power. If they feel the responsibility of a clean environment lies with them, then people with a libertarian mindset would be likely to get educated about environmental protection and behave pro-environmental. Public responsibility is thus seen as part of a libertarian mindset, because “people who value personal and social freedom also realize that they have [a] responsibility about what they do.”⁶⁰ A number of interviewees emphasize that there is an important difference between valuing freedom and selfish individualism. According to a Taiwanese researcher, a society oriented toward individualism is rather unlikely to show environmental concern. But one with a focus on community will care more and be more willing to improve the environment even through sacrifices.⁶¹ Here, individualism is seen as an egoistic tendency that is opposed to the more altruistic collectivism. This assumption and its link to environmentalism have been the subject of several studies (see Deng, Walker and Swinnerton 2006: 25). It is assumed that collectivism means that people will look out for each other, which would predispose them to also care about their environment. Indeed, there may be a link between emphasizing collectivism and environmental concern. In some studies, collectivist societies were found to score higher on the NEP scale than conservative and materialist ones (see Dunlap 2008: 11).

Another reason why libertarians would care for the environment might be a broader mindset that comes with being libertarian. Libertarians are thought by some interviewees to be idealists and have a holistic view of the world as an interconnected system. Therefore they would realize that their actions carry wide consequences.⁶²

What are the possible reasons why authoritarians would be concerned about the environment? Authoritarian regimes might use coercion in the form of punishment through laws to ensure that citizens follow the environmental rules they impose. Some interviewees stressed that an authoritarian system could be beneficial for environmental concern because environmental protection could be easily reinforced through a comprehensive law system and enforcing punishment. One Chinese business manager concedes that people may behave pro-environmental because they are afraid of punishment if they do not obey the rules, but

59 Lin Chi-Min. Email interview with author. June 11, 2013.

60 Interview with Korean teacher. Email interview with author. June 15, 2013.

61 Yixian Z. Email interview with author. May 31, 2013.

62 Interview with Taiwanese 23-year-old female student. Email interview with author. May 30, 2013; Interview with Taiwanese government official. Email interview with author. June 4, 2013.

that they are ultimately not concerned with environmental quality.⁶³ Similarly, one Japanese interviewee claims that adults are environmentally concerned because of societal and government rules that are designed to save the environment. She lists garbage separation and having to pay for plastic garbage bags as two such rules. Moreover she thinks that “common knowledge” dictates to Japanese adults not to use trash cans in public areas, but rather to discard waste in their own homes.⁶⁴ So although a strong law system might force citizens to carry out pro-environmental behavior, their actual concern is questionable. A reason for this is that following rules makes people passive and complacent, as one interviewee argues: Chinese people would tend to defer to teachers' or superiors' orders, which results in a lack of creativity and initiative. This would discourage them from learning about environmental issues and taking action to improve them.⁶⁵

Yet it is also possible that the authorities would use their power to either lull citizens with a false sense of security or force them to behave damaging to the environment. A number of Chinese interviewees believe that authoritarianism would negatively influence environmental concern because a strong authority may brainwash people to act in an environmentally unfriendly way. One of them claims that the Chinese government has control over the media “and is even able to make people believe there is no pollution at all.” A libertarian outlook would make people question things more instead of accepting public opinion. For him, knowledge is strongly correlated with concern.⁶⁶ By using media outlets and public opinion, governments thus have the power to ensure that citizens remain unaware of the critical state their environment may be in. Moreover, authoritarians are likely to defer responsibility to the authorities. One Taiwanese interviewee thinks that people with an authoritarian view “would think it's hard for them to influence the public policy.” She talks of her friend from the PRC who believes that actions to protect the environment are up to the government to undertake, while “normal people” have hardly any power to influence the environment positively.⁶⁷

To conclude, the samples for libertarianism and authoritarianism turned out to encompass too few respondents to have any real significance. Based on these small samples, the analysis showed that both factors were positively linked to environmental concern everywhere but Taiwan. This implies that those respondents who are classified as libertarian or authoritarian care about different issues, ranging from politics to environmentalism. Also, it seems that the separations of East Asian societies do not easily occur along libertarian/authoritarian lines in

63 Interview with Chinese business manager. Email interview with author. June 13, 2013.

64 Interview with unemployed Japanese female. Email interview with author. May 30, 2013.

65 Interview with Chinese management accountant. Email interview with author. June 1, 2013.

66 Yang Guangdi. Email interview with author. June 9, 2013.

67 Lin Chi-Min. Email interview with author. June 11, 2013.

the WVS data.

From the interviews with East Asians, it emerged that a libertarian outlook could positively influence concern for the environment because of three reasons: an emphasis on freedom that includes living in a good environment, a feeling of responsibility, and possibly having a more holistic mindset than non-libertarians. Although a strong law enforcement system might be able to enforce pro-environmental behavior, many interviewees thought that authoritarians would be less aware of environmental harm and more likely to defer responsibility to higher institutions. The analysis found that neither libertarianism nor authoritarianism seem to be strong indicators of environmental concern in East Asia.

4.8 Egoism vs Altruism and Environmental Concern

Table 28: Egoism and altruism distribution of the WVS samples for East Asia

	China		Japan		Korea		Taiwan	
	%	no.	%	no.	%	no.	%	no.
Egoist	45.9	924	17.1	187	36.6	439	29.3	359
Altruist	24.8	499	35.5	389	9.8	117	33.8	415
People in both sets	11.3	228	6.5	71	4.3	52	9.5	116
Total*		1423 (2015)		576 (1096)		556 (1200)		774 (1227)

*The reason these percentages do not add up to 100 is because only those people who answered the questions used in the egoism and altruism factor with accepted answers (see 3.3.8) form the sample groups.

(Data derived from 2005-2008 World Values Survey)

Using the egoism and altruism factors as explained in 3.3.8 resulted in different distributions of egoists and altruists for the East Asian WVS samples. In China and Korea, egoists outweigh altruists; in Japan and Taiwan it is reversed, although the gap in Taiwan is relatively small. Almost half of Chinese respondents are considered egoistic, while a quarter is deemed altruistic. Some of the Chinese interviewees mention reasons why altruism may be limited in China. Foremost are the one child policy as well as the lacking social environment that would discourage altruism among Chinese. In the case of Korea, more than a third of respondents are considered egoistic and only 9.8 percent show an altruistic mindset. It is notable that the percentage of altruists in the Korean sample is a lot smaller than in the other countries. One interviewee, a Korean English teacher, believes that altruism may be hindered by the fast-paced life style and self-centeredness of Koreans.⁶⁸ Less than a fifth of Japanese

68 Interview with Korean English teacher. Email interview with author. June 2, 2013.

respondents are deemed to have an egoistic value orientation, and a third of Japanese are considered to be altruistic. Taiwan has a slightly smaller percentage of altruists than Japan, but more egoists.

The way the altruist and egoist factors were set up (see 3.3.8) makes it possible for respondents to be classified as both, because their WVS answers put them in both subsets.

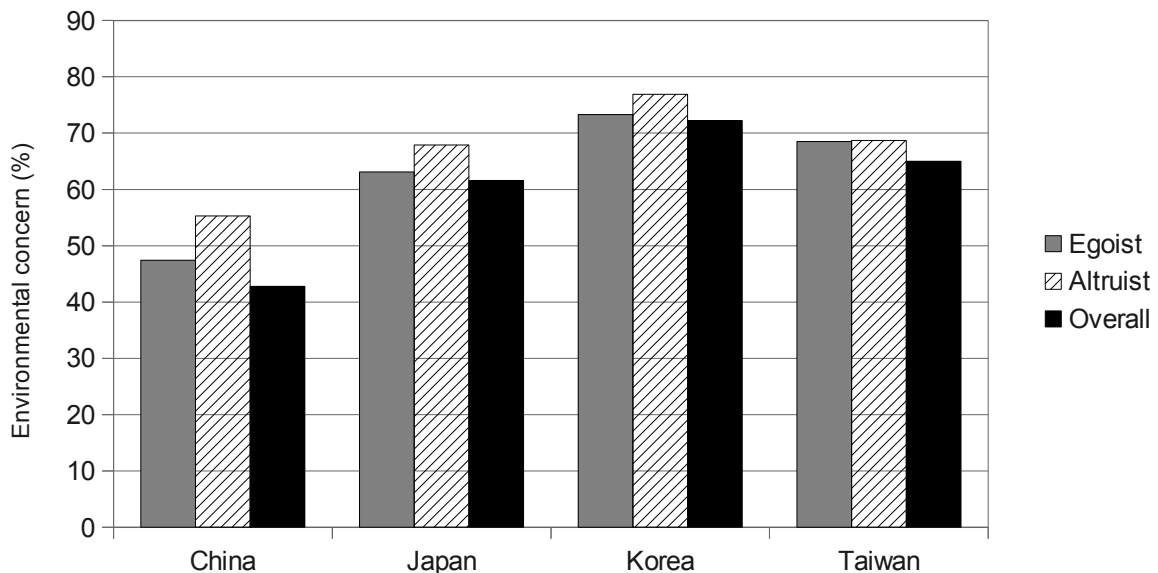


Figure 12: Environmental concern of egoists and altruists compared

(Data derived from 2005-2008 World Values Survey)

Figure 12 shows that in the Chinese, Japanese and Korean samples, more altruists are concerned about the environment than egoists. There is a slight positive link between egoism and concern for Chinese respondents, and a more strongly positive one between altruism and concern. The reason they can both be positive is that because of the way egoism and altruism are set up (see 3.3.8) not the entire sample gets split up into two groups. Rather, only the people who answered the relevant questions make up the two groups, which is why their total numbers do not add up to the total sample size.

Overall an altruistic value orientation is positively but not very strongly linked to environmental concern in the East Asian WVS samples. Interestingly, there was no negative link between egoists and concern in any of the samples, which is contrary to the expected findings and contrary to what was postulated in the VBN theory (see 2.2.2). A reason for this could lie in the way the egoism factor was set up in this study.

The overwhelming majority of East Asian interviewees thought that altruism would predict environmental concern. Although the analysis found that the link was not as strong as expected, it is worthwhile discussing the reasons why altruism would predict concern for environmental quality. First, altruists do not need any compensation for their actions because they act in a way they believe will benefit not only themselves but also other people. Seeing as altruists care about the well-being of many or all people, they would likely be interested in sustainable development, as several interviewees point out. They believe that altruists would focus on sustainability, which stresses the protection of environmental quality. Moreover, altruists would also consider future generations and how their actions might impact them. A prime reason why sustainability is deemed important is human health. One Korean interviewee believes that health is very important to Koreans, therefore people would co-operate to ensure everyone's health.⁶⁹

Moreover, altruists are more likely to feel it is their duty to care about the environment as compared to egoists. Japanese NGO employee Aiko talks of a “sense of obligation” that older people or those living in an abundant natural environment have to preserve it “for future generations.”⁷⁰ Another interviewee brings up the traditional religions Buddhism and Taoism. Both preach humility and closeness to nature. She believes that this means people should be altruistic “to everything near you,” including not just people but also the biosphere.⁷¹ Similarly, Confucianism “is all about altruism” with its filial piety and humanism, as one Taiwanese interviewee points out. She believes that Taiwanese people are strongly influenced by Confucianism, although this influence is most prevalent in school. Some people would keep up the habit of caring about the environment, but many people would follow trends like owning the latest electronic devices without caring about their environmental impact.⁷²

Furthermore, many interviewees from China, Japan and Taiwan emphasize that altruists are important because they inspire others to follow their example, and thus help incite social change. One Chinese talks of the many volunteers who help out after natural disasters such as the Wenchuan earthquake of 2008. She claims that independent of education level or income, these people would efficiently help others. She also mentions environmental education and actions through volunteers, such as animal protection or tree planting.⁷³ Such altruistic actions benefit society because they are likely to make other people follow the good examples. Celebrities who report their good-doing through blogs or other media are one popular way by which altruistic actions and environmental awareness are spread.

69 Interview with Korean graduate student. Email interview with author. June 9, 2013.

70 Aiko. Email interview with author. June 7, 2013.

71 Interview with Korean teacher. Email interview with author. June 15, 2013.

72 Yixian Z. Email interview with author. May 31, 2013.

73 Interview with Chinese management accountant. Email interview with author. June 1, 2013.

With respect to egoism, most interviewees claimed that it would be negatively linked to environmental concern, if at all. This is in line with the claims of the VBN theory, but was not supported in the analysis. Some Chinese interviewees believe that an egoistic value orientation is typical for China. In an effort to fulfill their goals, many companies would ignore environmental regulations and people would rather save money than spend more to buy ecologically sound products. Egoistic needs would also drive people to buy and overuse polluting machines or vehicles. One interviewee mentions “a trend of distorted understanding of environmental concern,” by which she means that people's environmentalist concerns are exploited by businesspeople making environmentally sound cars or materials “to gain government's subsidies” and money.⁷⁴ A similar kind of discontent is noticeable among some Korean interviewees, who blame big companies and the government for environmental degradation and egoistic profit-seeking. One talks about the current energy crisis in Korea and mentions that a nuclear power plant was shut down recently because it was found to have been built using materials of low quality. Had this not been found out, the ecological consequences of a potential meltdown would have been severe.⁷⁵

Besides a negative perception of businesses as being unethical towards the environment, several interviewees also mention individual level egoism and its negative impact on concern. People would often carelessly pollute their environment because it is convenient for them. Making the effort to carry out a pro-environmental action would require them to go out of their way, which an egoist is less likely to do than an altruist, as an egoist is mostly motivated by things that are beneficial for himself. Egoists would rather defer responsibility to others and only concern themselves with their immediate surroundings and problems. One interviewee believes that Chinese people's lives are focused on conventions rather than awareness of environmental issues:

Somehow Chinese are not that open-minded, most of them follow the conventional way of life: go to [a] good university, then get a good job either by their parents' social network or their own effort, then struggle to get their own houses and cars and get married, then raise their children and get them the best education, then mind their children's future. The stories and news and programs on TV and newspapers or from [the I]nternet, the topics among friends, colleagues, families are mostly about their conventional way of life. So in their mind, other issues are relative[ly] less important.⁷⁴

A crucial problem is that the production and consumption of most goods and services carry wide environmental consequences, both in the way they are produced and because they tend to generate waste. With rising incomes and technological advances, it is becoming increasingly easy to satisfy one's desires and follow new trends. At the same time, many

⁷⁴ Interview with Chinese management accountant. Email interview with author. June 1, 2013.

⁷⁵ Interview with Korean teacher. Email interview with author. June 15, 2013.

people do not consider the environment to be an integral part of their lives. Daily routines revolve around working, feeding oneself and sleeping, which – especially in urban areas – is indeed not close to green environments. One Korean English teacher points out that the life style of modern Koreans has a very fast pace. Because of this, “they often get to be ignorant about things that are not really related directly to their life and it's easier to be selfish.”⁷⁶ However, as NGO employee Aiko points out, only if an individual's level of environmental concern is low from the start, will they “prioritize self-satisfaction over environmental concern.”⁷⁷ Some interviewees concede that egoists may not be aware that their actions have an impact not only on the next, but all following generations. Therefore they may act less concerned because they lack awareness. This fact would inhibit sustainable development in the long run, because awareness about the consequences of individual actions is an important precursor to such development, according to one Chinese interviewee.⁷⁸

A small number of interviewees thought that egoism could be positively linked to concern. They muse that egoists might value living in a good environment and therefore try to act more pro-environmental.⁷⁹ If a clean and healthy environment for oneself is part of someone's values, then a person can be called egoistic but still be environmentally concerned.

To conclude, the analysis of the WVS data shows that everywhere but Taiwan, altruists are slightly more likely to be concerned about the environment than egoists. The link was not as strong as expected, with egoism also being positively correlated with concern. So overall, neither altruism nor egoism emerged as strong influences on environmental concern in East Asia. The majority of the interviewees thought that altruism would predict environmentalism, because altruists would feel it is their duty to behave pro-environmental or because they care about the well-being of other people. In this respect, Confucian, Buddhist and Taoist teachings were mentioned as motivating people to act altruistically. Many of the interviewees also stressed the importance of volunteers and their function as role models for others. Egoism was mostly thought to be negatively linked to concern, as a focus on convenience and profit would override concern for environmental problems.

76 Interview with Korean English teacher. Email interview with author. June 2, 2013.

77 Aiko. Email interview with author. June 7, 2013.

78 Interview with Chinese supply chain planner. Email interview with author. June 9, 2013.

79 Interview with Chinese business manager. Email interview with author. June 13, 2013; Kim Hyo. Email interview with author. May 30, 2013; Interview with unemployed Japanese female. Email interview with author. May 30, 2013.

4.9 Faith in Science and Environmental Concern

Table 29: Faith in science distribution of the WVS samples for East Asia

	China		Japan		Korea		Taiwan	
	%	no.	%	no.	%	no.	%	no.
Faith in science	79.4	1600	72.1	790	73.8	885	80.8	991
No faith in science	20.6	415	27.9	306	26.2	315	19.2	236
Total		2015		1096		1200		1227

(Data derived from 2005-2008 World Values Survey)

Faith in science and technology refers to the belief that scientific advances have the power to overcome any difficulties, including both local and global environmental pollution. The majority of all four East Asian samples show faith in science according to the criteria set down in section 3.3.9. About one quarter of Japanese and Korean respondents and one fifth of Chinese and Taiwanese respondents show no faith in science. These numbers are hardly surprising, given the fact that the four countries are global players with respect to new technologies. Being exposed to technological advances is likely to create a strong belief in the power of science and technology to come up with ever more creative and efficient ways of solving problems.

The question is, in how far is faith in science linked to concern for environmental quality? Figure 13 provides an answer.

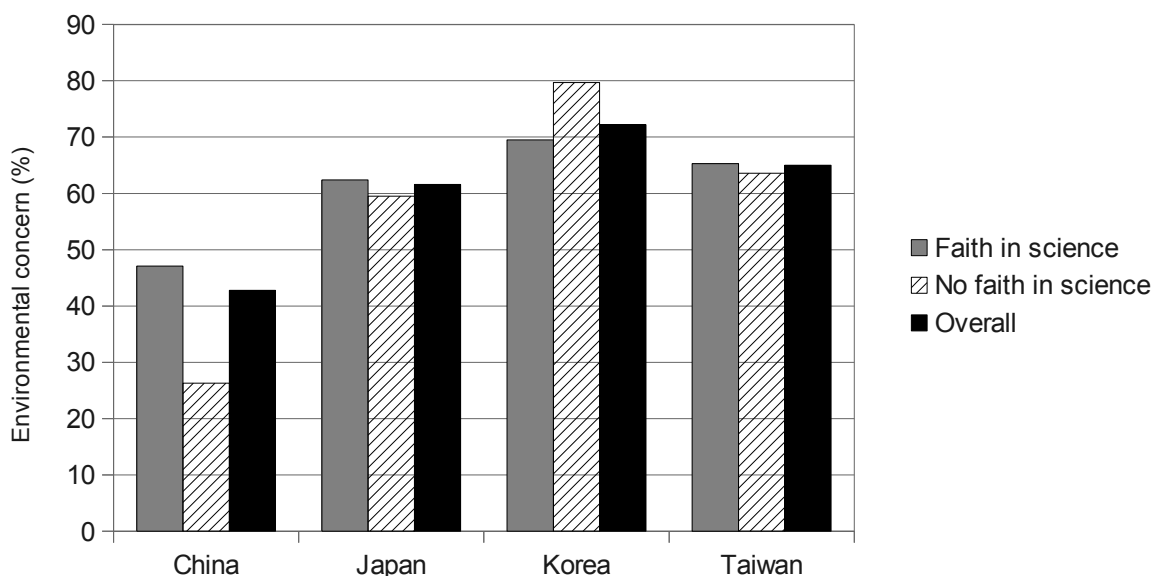


Figure 13: Environmental concern and faith in science

(Data derived from 2005-2008 World Values Survey)

The results from the analysis show that 47.1 percent of Chinese who showed faith in science are also considered environmentally concerned. Compared to the overall concern of the Chinese sample, that is a positive correlation. In order to check if that correlation is valid, the concern of people without faith in science was tested as well. For Chinese respondents a negative correlation was found to exist between no faith in science and environmental concern. For the Japanese and Taiwanese samples, there is a similar correlation between faith in science and environmental concern, but on such a small scale that it is negligible. So faith in science has no effect on Japanese and Taiwanese respondents. Interestingly, the Korean sample shows a reversed correlation. People with no faith in science are more likely to show concern. Korea thus breaks the slight trend seen in the other East Asian samples.

For Chinese WVS respondents, faith in science seems to be a motivator for environmental concern. In support of this finding, most Chinese interviewees thought such faith would be positively correlated with environmental concern. Korean interviewees also thought the link would be positive, although the analysis showed a different result. In Japan and Taiwan, the link between the two factors seems weak. Japanese interviewees were split evenly between believing the link would be positive or negative. Taiwanese thought the link would be negative.

The problem with faith in science is that it can go two ways. Believing that science and technology can solve ecological problems could discourage concern because people might feel the burden of responsibility does not lie with them. Therefore, they might not feel the need to contribute individually to improving the environment, because scientists and new technologies would take care of solving environmental problems. This perception is mirrored in the NEP theory, where faith in science is thought to be characteristic of people who believe in a strong economy over environmental protection. Yet at the same time, believing in science could encourage concern because people might feel that technologies can be tools that help improve the environment. Studying how to use technological advances could thus also be a motivator for people who are concerned about the environment not to give up in the face of seemingly insurmountable ecological problems. In the following discussion, this problem will be considered.

Since the findings show a positive link between faith in science and environmental concern for China and a negative one for Korea, it is worthwhile asking what reasons could lie behind such correlations. Common perceptions in the questionnaires were that faith in science would encourage concern for the environment because such faith gives people hope. Some

interviewees emphasize that their societies have benefited greatly from scientific advancements and that further scientific studies and new discoveries will be able to help protect the environment in the future. One Japanese student emphasizes that science and technology have helped develop environmentally friendly products such as hybrid cars. However, people would buy things for their cheaper price rather than environmental benefits, he believes.⁸⁰ So a prevalent opinion is that technological advances are a crucial factor in improving people's lives and protecting the environment. Those interviewees who believe this also thought that faith in science encourages environmental concern.

Some Chinese interviewees are skeptical of the benefits of science and technology. They emphasize that scientific advances and evidences are ever-changing and also potentially dangerous for environmental quality, therefore faith in science could both encourage and discourage concern. One of them emphasizes that “the development of science and technology compromises environmental protection” in that many technologies harm the environment (i.e. motor vehicle emissions), but on the other hand pro-environmental inventions (i.e. solar vehicles) are only possible through science.⁸¹ Several other interviewees have a similar opinion. They admit that there is both a bright and a dark side of technology, but hope that future inventions will be able to improve the environment. One of them criticizes that people dream of the benefits scientific advances will bring in the future without realizing the environmental hazards in the present.⁸²

Moreover, increased scientific knowledge is also believed to play an important part with respect to environmental concern. Several Chinese interviewees point out that progress in science and technology allows for proofs that the environment is in a bad state. This in turn would encourage people to become concerned. By relying on scientific measurements, people would be able to assess environmental issues more objectively. “More available information” is believed to lead to more concern⁸³, and since science provides such information, people who trust in science would show more concern and value a clean environment more.

Faith in science can thus be positively linked to environmental concern because it gives people hope and because scientific advances increase the available information about environmental issues. However, a strong faith in science can also be linked to a lack of awareness. A Taiwanese interviewee believes that for this reason, faith in science inhibits environmental concern: “The smart phones, the laptops, all kinds of electronic devices are ubiquitous. People don't think before they buy them or abandon them. They don't care how these products are made” or where they end up. She believes that blind faith in science is

⁸⁰ Yusuke Nomoto. Email interview with author. May 31, 2013.

⁸¹ Yang Li. Email interview with author. June 3, 2013.

⁸² Interview with Taiwanese employee. Email interview with author. June 5, 2013.

⁸³ Li Jiaqi. Email interview with author. June 9, 2013.

negatively linked to environmental concern because it allows people to consume without the consciousness that they are contributing to environmental pollution.⁸⁴ This view corresponds with the claim of the NEP theory that an emphasis on materialism and anthropocentrism hinder environmental concern. Environmental NGO employee Aiko gives another example for how faith in technological advances can inhibit environmental concern. She says people try to alleviate air pollution problems by installing air purification systems in their houses, but the sources of the problem are not dealt with, and such systems are energy-intensive.⁸⁵ Although scientific advances have been made with respect to environmentally friendly products and technologies, people often lack the knowledge how to use them in a pro-environmental way.

Another theory that sees a negative link between faith in science and environmentalism is the institutional trust hypothesis. It argues that trust in institutions such as science, technology, and the government is negatively linked to concern for the environment. Davidson and Freudenburg state that the majority of the literature they reviewed supports this hypothesis (Davidson and Freudenburg 1996: 319). One argument in support of this hypothesis is that people who strongly trust in such institutions defer any responsibility they might otherwise ascribe to themselves, to those institutions. Reversely, distrust of technologies or the government can result in increased concern for the environment, as some interviewees point out. One Taiwanese government official believes that faith in science would not encourage environmental concern among Taiwanese. He claims this is because the Taiwanese are distrustful of the government. As an example he mentions Taiwan's fourth nuclear power plant, which is being built despite anti-nuclear protests.⁸⁶ Nuclear energy is a prevalent technology that many interviewees believe discourages environmental concern. In light of the Fukushima nuclear disaster of 2011, this view is hardly surprising. Also, phenomena such as global warming and natural disasters have made people less trusting in the abilities of science and technology to overcome such problems.⁸⁷ Moreover, trust in the government plays a vital role.

One interviewee criticizes the myriad of new science and technology projects that the Chinese government is undertaking to develop the economy. She fears that the costs of such projects, like wind power, solar panels and electric cars, outweigh the benefits, because the infrastructure is still lacking in China and development is too hasty: "they didn't go through the proper experience process." For her, too much trust in science is dangerous and has the potential to destroy the environment. She emphasizes that many things which harm the

84 Yixian Z. Email interview with author. May 31, 2013.

85 Aiko. Email interview with author. June 7, 2013.

86 Interview with Taiwanese government official. Email interview with author. June 4, 2013.

87 Interview with Taiwanese professor. Email interview with author. June 4, 2013.

environment such as plastic bags and pesticides exist only because of former scientific advances.⁸⁸ Again, this view echoes the argument of the NEP theory, which links a focus on economic progress with a lack of environmentalism.

To sum up, the results from the WVS analysis suggest that there is no correlation between faith in science and concern for the environment in the Japanese and Taiwanese samples. In China, the relationship between the two is positive, so Chinese with faith in science are more likely to be concerned about the environment. In the Korean sample, the trend is reversed, and people with faith in science are less likely to be concerned about the environment than those without. The Korean finding supports the claim of the NEP theory where faith in science corresponds to an economic rather than a pro-environmental mindset.

With respect to the questionnaire, among the Chinese interviewees there is a positive view of science and technology, although some also object and see dangers in trusting scientific advancements too much or too rashly. The perceptions of Korean interviewees were similar, even though the results of the WVS analysis showed the a negative link between Koreans' concern and faith in science. Japanese interviewees' perceptions of science and technology are split. Most of them emphasize that technological advancements have the power to help protect the environment, but individual concern is mostly alleviated by relying on such products. Taiwanese interviewees also thought the link would be negative.

5 CONCLUSION

The purpose of this paper was to find out what factors influence the environmental concern of Chinese, Japanese, Korean and Taiwanese populaces. To achieve this aim, a method mix was used which combined a novel analysis of existing data from the fifth wave of the World Values Survey (WVS), and qualitative email interviews with East Asians which I conducted.

Environmental concern in this thesis was assessed based on ten WVS questions, which included awareness of environmental pollution, willingness to pay for environmental protection, and a choice between economic growth and environmental protection. The WVS data showed that by these criteria (see 3.3.1) the concern of Chinese, Japanese and Taiwanese respondents is below the global environmental concern (that of all respondents of the fifth wave WVS). Korean concern, on the other hand, slightly surpasses global concern. The analysis showed furthermore that some factors were indeed linked to the environmental concern of East Asians.

⁸⁸ Interview with Chinese management accountant. Email interview with author. June 1, 2013.

In all four countries, more young people showed concern than older respondents. Only in Japan did environmental concern rise again among the elderly (those above the age of 60 years). This means that the age hypothesis was found to apply for East Asian populaces. One crucial reason why many young East Asians show concern compared to their elders is that they are growing up in a time period with constant exposure to environmentalism in the media. Moreover, formal education nowadays increasingly stresses the scientific background of environmental pollution as well as the interdependence of ecosystems. Older birth cohorts lack both of these points. They are motivated to behave pro-environmental either because they experienced pollution in their youth or because they are concerned for their offspring's health and future. These were the prime arguments raised by the East Asian interviewees. While most Chinese and Taiwanese thought that age would be negatively linked to environmental concern, most Japanese and many Korean interviewees thought older people would more likely be concerned. This trend reflects the findings of the analysis for the most part.

Another factor that was significantly linked to East Asians' environmental concern was social class. Education level and income were both positively correlated to concern across the four samples, only Japanese people's concern was barely influenced by income. Most interviewees emphasized in the questionnaire that a formal education would be crucial in helping people build a pro-environmental mindset. Perceptions were more divided with respect to income. Several interviewees thought that affluent East Asians would be unlikely to care about environmental quality, because they can afford to waste resources and are not as exposed to pollution as the lower classes. The influence of the subjective social class factor was difficult to gauge because only few WVS respondents across all four samples described themselves as belonging to the upper class. Overall, social class was positively linked to environmental concern of East Asians. The postmaterialism theory was tested as well and turned out to apply in the Japanese, Korean and Taiwanese samples. More postmaterialists than materialists showed concern there. Many interviewees from China perceived environmental concern to be a luxury that people strive for only after their basic needs are fulfilled. The social class and postmaterialism theories were thus found to be, by and large, valid in East Asia.

Next, the results showed that East Asians with an altruistic mindset were slightly more likely to care about environmental quality than egoists in three out of four samples. The Values-Beliefs-Norms (VBN) theory postulated that an altruistic mindset would be a motivator for environmental concern, while egoism would be negatively linked to environmentalism. However, the link was not as strong in the East Asian WVS samples as expected, as egoism was also positively related to concern. The majority of the interviewees

thought that altruists' strong sense of responsibility and concern for their fellow humans would predestine them to behave pro-environmental. The teachings of Confucianism, Buddhism and Taoism were mentioned in this respect, as they emphasize mindfulness and altruism. Many interviewees stressed their perception that most businesses and many people were driven only by profit and convenience, which would result in environmental pollution. Yet egoist individuals might also value living in an unpolluted environment, which could motivate them to become concerned although they may care primarily about their own well-being. In sum, the assumption of the VBN theory that altruists would be more likely than egoists to show environmental concern was found to apply for East Asia.

In contrast, several factors did not seem to play an important role with regard to environmental concern in East Asia. Gender was not a strong predictor in any of the countries. Only in China did more men than women show concern. The gender hypothesis had argued that environmental concern would differ depending on the gender of the respondent. This hypothesis did not hold true for East Asians, as the analysis of the WVS data shows. The prevalent perception of Chinese and Taiwanese interviewees was that gender would not be linked to concern, while most Japanese and Koreans thought women would be more inclined to care for the environment. These perceptions differ from the results of the analysis. There are several reasons why more Chinese men than women would show concern for environmental quality. Men are believed to have a greater technical understanding than women, so they are likely to have more technical background information about environmental issues. Moreover, Chinese men are more likely than women to work in the political sphere, which includes involvement with environmental issues. Men are furthermore deemed to be responsible to provide for their families. Caring for their families' health and well-being might thus be another reason why they would be concerned about environmental quality. Further research is needed into why gender has an influence on concern only in China and not the rest of East Asia.

Contrary to the expectations and the claims of the degradation hypothesis, exposure to environmental pollution turned out to be linked to concern only in China. More Chinese who rated their environment to be in a poor condition were found to show environmental concern compared to the respondents who thought their environment was in a good state. Although this only applied to the Chinese sample, most East Asian interviewees believed that the degradation hypothesis would be valid in their country. They thought health and physical well-being would be a top motivator for people to care about their environment. Yet a number of Chinese and Korean interviewees raised a crucial point, namely that people who have never

experienced a better environment might not be aware of the pollution surrounding them. This would hinder their concern. Moreover, many people would be forced to live in polluted areas because of social and economic reasons, and would be unlikely to have any means to change their situation.

Similarly, neither authoritarianism nor libertarianism showed a strong relation to environmental concern in the four samples. One problem with these two factors was that the way they were constructed in this paper resulted in very small samples of East Asian authoritarians and libertarians. Both groups were found to be positively linked to environmental concern. This shows that those WVS respondents whose answers placed them in the authoritarian or libertarian group also care about the environment by the metric used in this thesis. Based on this finding, one could assume that those East Asians who care about political issues and thus answered the political questions underlying the authoritarian and libertarian factors also tend to care about environmental issues. It emerged from the free-form questionnaire that most interviewees believed libertarians would be more likely to be concerned than authoritarians. The latter might be forced to behave pro-environmental through a strong law enforcement system, but would rather tend to lack awareness of environmental problems and defer authority. Libertarians, on the other hand, would value freedom and therefore want to live in an unpolluted environment. They would also possess a broader mindset than authoritarians and assume responsibility for environmental problems, according to many of the interviewees. The reviewed literature claimed that a liberal political attitude was positively linked to environmentalism in Western societies. This claim was not found to apply with respect to East Asia, although further research is recommended into East Asians' underlying political values. I conclude that their attitudes cannot easily be classified as either libertarian or authoritarian by the metric used in this thesis.

Another factor that showed no consistent relationship to East Asians' environmental concern was faith in science. It turned out to be linked to concern only in the Chinese and Korean samples. Chinese respondents with faith in science were more likely to care about the environment, while the link was reversed for Korean respondents. In the New Environmental/Ecological Paradigm (NEP) theory, faith in science is seen as obstructing a pro-environmental mindset, because such faith is linked to a preference for economic prowess over environmental protection. As Koreans without faith in science were more likely to show environmental concern, this aspect of the NEP theory holds up for Korea. The Chinese finding reflects the view that scientific advances enable greater knowledge about environmental pollution. This knowledge would lead to more awareness and more concern, according to many Chinese and Korean interviewees. Japanese and Taiwanese interviewees

were more critical of the effect scientific advances have on individual environmental concern. They emphasized that relying on new technologies to save the environment would make people less willing to act pro-environmental themselves.

In this thesis first steps were made into exploring environmental concern in East Asia. In a few cases, the East Asia data seems to contradict the standard hypotheses established in the Western world. This shows that the study of environmental concern in East Asia is interesting and warrants further research. It is recommended that the link between political views and environmentalism of East Asians is studied further. As it turned out, the WVS respondents could not be easily classified as libertarian or authoritarian. Also, gender and exposure to environmental degradation are two factors that may yield conclusive results in further research with regard to their impact on East Asians' environmentalism. Moreover, a longitudinal study of environmental concern could shed more light on East Asians' motivations. The WVS surveys are not sufficiently fine-grained to do such a study.

The East Asian region is experiencing rapid social and economic growth, therefore the trends that emerged from this analysis are valuable in quantifying what is happening in the region with respect to environmentalism. The support of the populace is crucial for the implementation of pro-environmental measures. Knowing which factors influence individual environmental concern is therefore useful as it helps to know which population groups are likely to show high or low concern. This knowledge can facilitate the mobilization of those groups for the environmental cause. The analysis in this thesis found that age, social class and altruism are strongly linked to environmental concern of East Asian WVS respondents. Gender, exposure to degradation, egoism, libertarianism, authoritarianism and faith in science were not significantly related to their concern. This data is useful information that activists and policymakers can draw upon to target specific population groups in their efforts to spread environmental concern among East Asians.

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Abbreviations

DPRK	Democratic People's Republic of Korea
DSP	Dominant social paradigm
HOP	Health of the Planet
NEP	New environmental/ecological paradigm
NGO	Nongovernmental organization
OPSV	Objective problems and subjective values
PPS	Probability proportional to size
PRC	People's Republic of China
ROC	Republic of China
ROK	Republic of Korea
UN	United Nations
US	United States
VBN	Values-beliefs-norms
WVS	World Values Survey

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Appendix

Appendix 1

Sieving Program

```
import numpy as np

def datasieve(data, rules, threshold, anti=False):
    data_size=len(data)
    answer_sheet=np.zeros(data_size)
    for rule in rules:
        q_num, answers, weight=rule
        logic_sheet=np.zeros(data_size, dtype=np.bool)
        for answer in answers:
            test=data[:,q_num]==answer
            logic_sheet=np.logical_or(test, logic_sheet)
        sub_answer_sheet=np.zeros(data_size)
        sub_answer_sheet[logic_sheet]=weight
        answer_sheet=answer_sheet+sub_answer_sheet
    mask=answer_sheet>=threshold
    sub_data=[]
    if anti:
        sub_data=data[~mask]
    else:
        sub_data=data[mask]
    return sub_data
```

Appendix 2

Questionnaire

Thank you for taking the time to answer my questions on environmental concern. I would like you to answer these questions as completely as you feel able to. Your opinions and perceptions are valuable to me as a way to gauge the perceptions of environmental concern in your country. If you feel unable or unwilling to answer any question, please feel free to skip it.

In this study, environmental concern means the awareness of environmental and ecological problems and the willingness to solve them⁸⁹.

Your country of residence:

Your age:

Your gender:

Your occupation/ affiliation:

Your name (optional):

In your opinion, in what ways does age influence environmental concern in your country?

Do you think gender affects environmental concern in your country? In what way?

Do you think living in a polluted environment makes people more or less likely to express environmental concern?

What role do you think the level of formal education plays with regard to environmental concern in your country?

⁸⁹ See Dunlap, Riley E., and Robert Emmet Jones (2002). "Environmental Concern: Conceptual and Measurement Issues." In *Handbook of Environmental Sociology*, edited by Riley E. Dunlap and William Michelson. Westport, CT: Greenwood Press. p. 485

How do you think a person's income level influences his or her level of environmental concern?

What role does class ("lower", "middle", and "upper class") play with respect to environmental concern in your country?

In your opinion, how does a libertarian worldview affect environmental concern in your country? By libertarianism, I mean a person's value of social and personal freedom.

How do you think an authoritarian worldview influences environmental concern in your country? By authoritarianism, I mean a person's deference to authority figures or institutions.

Do you think faith in science and technology encourages or discourages environmental concern in your country? Why?

In your opinion, in what ways does altruism influence environmental concern in your country? By altruism I mean the unselfish dedication of people's time and resources to others.

How do you think egoism affects environmental concern in your country? By egoism I mean the pursuit of one's own well-being without much concern for others.

Are there any other factors that you think influence environmental concern in your country? Which ones?

Thank you for your help!

Appendix 3

Abstract

Environmentalism has become a central topic of both national and global discourse. In order to better shape policy and understand public opinion, research is needed into the general public's relationship with environmentalism. Existing studies try to explain individual levels of environmental concern by linking it to socio-demographic factors or value orientations. Only few of them focus on East Asian societies. The East Asian region is currently undergoing rapid social and economic growth, which has many ecological consequences. In order to implement policies that help protect the environment, the support of the populace is needed, as the sum of many individual behaviors has a strong impact on the environment. This thesis looks into which factors influence the environmental concern of East Asian individuals. To this end, existing data from the 2005-2008 wave of the World Values Survey is analyzed in an original approach. Environmental concern is measured using a self-derived metric that includes willingness to sacrifice for environmental protection, awareness of environmental pollution, and a preference for environmental protection over economic growth. The analysis focuses on respondents from the People's Republic of China, the Republic of China, the Republic of Korea, and Japan. The factors that are examined range from sociodemographic factors like age, income and education level to value factors like authoritarian views, altruism and faith in science. Moreover, informal email interviews with East Asian individuals were carried out to support the findings from the analysis. The results showed that age and social class were strongly linked to environmental concern of East Asian WVS respondents, with concern being more likely in younger, higher class respondents. Furthermore, altruistic and postmaterialist respondents were more likely to show concern than those with an egoistic mindset. Gender and exposure to environmental degradation were linked to environmental concern only in the Chinese sample. Libertarianism, authoritarianism and faith in science, however, did not show strong links to concern in the East Asian WVS samples. These findings partly contradict existing hypotheses that apply in Western societies, indicating that the motivation for East Asians' environmentalism warrants further research.

Appendix 4

Zusammenfassung

Die Bedeutung des Themas Umweltbewusstsein im nationalen und globalen Diskurs nimmt laufend zu. Die Erforschung der Hintergründe von Umweltbewusstsein ist erheblich, da sie dabei hilft, politische Maßnahmen für Umweltschutz zu setzen, und ein besseres Verständnis der öffentlichen Meinung ermöglicht. Die vorliegende Masterarbeit beschäftigt sich mit dem Umweltbewusstsein von OstasiatInnen und hat zum Ziel herauszufinden, welche Faktoren dieses beeinflussen. In der Literatur wird Umweltbewusstsein hauptsächlich mit soziodemografischen Faktoren sowie generellen Wertvorstellungen in Verbindung gebracht. Bisher gibt es recht wenige wissenschaftliche Arbeiten, die sich mit Umweltbewusstsein speziell in Ostasien auseinandersetzen. Da die Region aber durch ihr rasches Wirtschaftswachstum immensen ökologischen Problemen ausgesetzt ist, ist es höchst relevant zu erkunden, welche Faktoren OstasiatInnen dazu motivieren, umweltbewusst und -freundlich zu agieren. Zur Beantwortung der Forschungsfrage wurde ein Methodenmix verwendet, der eine neuartige Analyse von Daten aus der fünften Welle des World Values Survey (WVS) mit qualitativen Interviews mit OstasiatInnen kombiniert. Die Analyse konzentriert sich auf Befragte aus der Volksrepublik China, Japan, der Republik Korea, und Taiwan. Der Begriff Umweltbewusstsein umfasst eine Präferenz für Umweltschutz gegenüber Wirtschaftswachstum, Bewusstsein über lokale und globale Umweltverschmutzung, und Zahlungsbereitschaft für Umweltschutz. Die vorliegende Untersuchung ergab, dass Alter, soziale Schicht und Altruismus signifikant mit dem Umweltbewusstsein der befragten OstasiatInnen im WVS korreliert sind. Die Faktoren Geschlecht und Belastung durch Umweltverschmutzung wiesen nur unter ChinesInnen eine Verbindung zu Umweltbewusstsein auf. Libertarismus, Autoritarismus sowie Glaube an Wissenschaft und Technologie waren nicht signifikant mit dem Umweltbewusstsein der OstasiatInnen korreliert. Diese Ergebnisse gehen teilweise nicht mit den einschlägigen Hypothesen einher, die in vielen westlichen Gesellschaften gültig sind. Weitere Untersuchungen sind daher notwendig, um mehr Aufschluss darüber geben zu können, welche Faktoren das Umweltbewusstsein von OstasiatInnen beeinflussen.

Appendix 5

Curriculum Vitae

Name Judith Hagenhofer

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Education

10/2009 – 2014 University of Vienna: Master program

“East Asian Economy and Society”

09/2008 – 07/2009

Zhejiang University, Hangzhou, China,
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Chinese language and culture program

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University of Vienna: Bakkalaurea philosophiae (honors)

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Beijing Review, China: Intern (writing, editing and
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Appendix 6

Lebenslauf

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10/2009 – 2014	Universität Wien: Masterstudium “ <i>Wirtschaft und Gesellschaft Ostasiens</i> ”
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