RECYCLING BEHAVIOR IN GERMANY IN THE EARLY 1990s: PERSON-LEVEL AND CONTEXTUAL DETERMINANTS OF RECYCLING

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INTRODUCTION

After the reunification of Germany in 1990, one could only guess how this massive event would unfold and what its long-term effects would be. The process of reunification has long been officially complete; however, there are still distinct social, cultural, political and socio-economic differences along the lines of the former division. From a legal perspective the "reunification" of Germany can be described more accurately as the eastern states (*Länder*) joining the Federal Republic of Germany. Each of the eastern states individually ratified the constitution of what is commonly called West Germany. In the area of the state, East Germany took on the structures the western states and West Germany had in place.

Environmentalism and its practice, particularly recycling, were two of many areas of life that changed during the process of reunification. It would be plausible to assume that East Germany simply took on the system of recycling practiced in West Germany. But new legislation introduced in 1991 overhauled recycling systems across unified Germany. With further contextualization of the recycling systems in place, it will be possible to examine the impact of these various recycling systems on German recycling rates in the early 1990s.

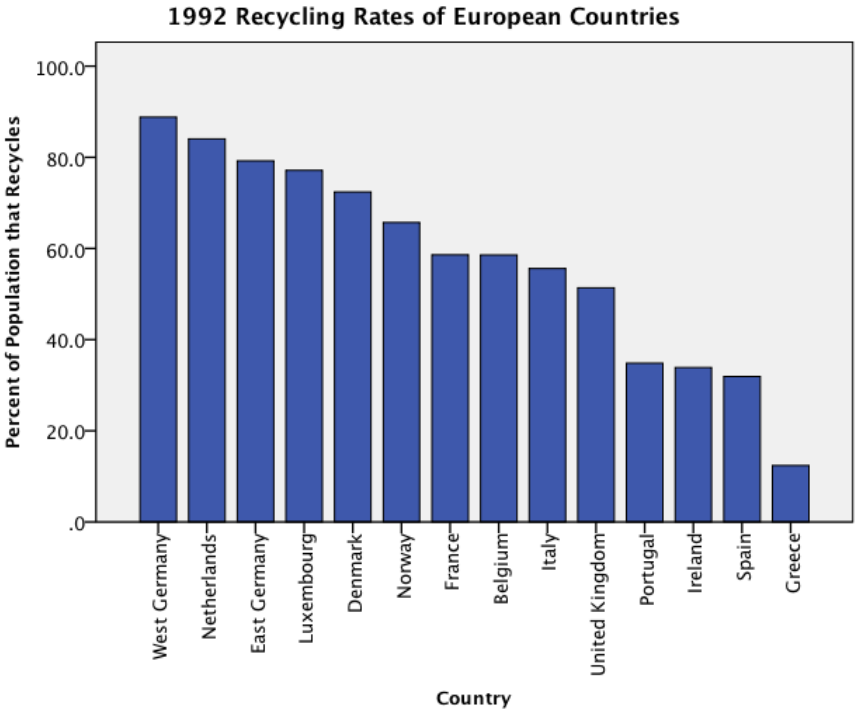
East and West Germany were separate countries from the end of World War II in 1945 until Germany's official reunification on October 3, 1990. In that 45-year span entire generations grew up in completely different societies. In most facets of life, the known institutions and principles were to some extent divergent. A plethora of literature exists about the *Mauer im Kopf*, a phrase that refers to the virtual wall separating East and West Germany in certain aspects of life. Their economies (particularly levels of unemployment), voting behaviors, political cultures, negative perceptions of each other and levels of xenophobia are some examples of

divisions that lasted for decades (Rodden 2000: 11-12). One could ask whether this *Mauer im Kopf* impacted recycling behavior of Germans, resulting in divergent rates.

This thesis has two aims. First, I will test existing theories of recycling behavior in the (pan-) German context. Using statistical analysis I will test the effects of demographics, personal behavior and beliefs on recycling behavior. I will also compare the determinants of recycling behavior in Germany in 1992 and 1995. Second, I will determine whether eastern and western Germany are different from each other in recycling rates and/or explanations of recycling behavior. Due to the high extent of recycling throughout Germany before unification, I will show that the *Mauer im Kopf* theory does not have particularly strong evidence in the case of recycling. Interviews of citizens of the formerly divided countries will assist in providing a picture of recycling practices in the regions at that time. To achieve these goals, statistical analysis plays a key role, but relevant historical and contextual information also support the findings.

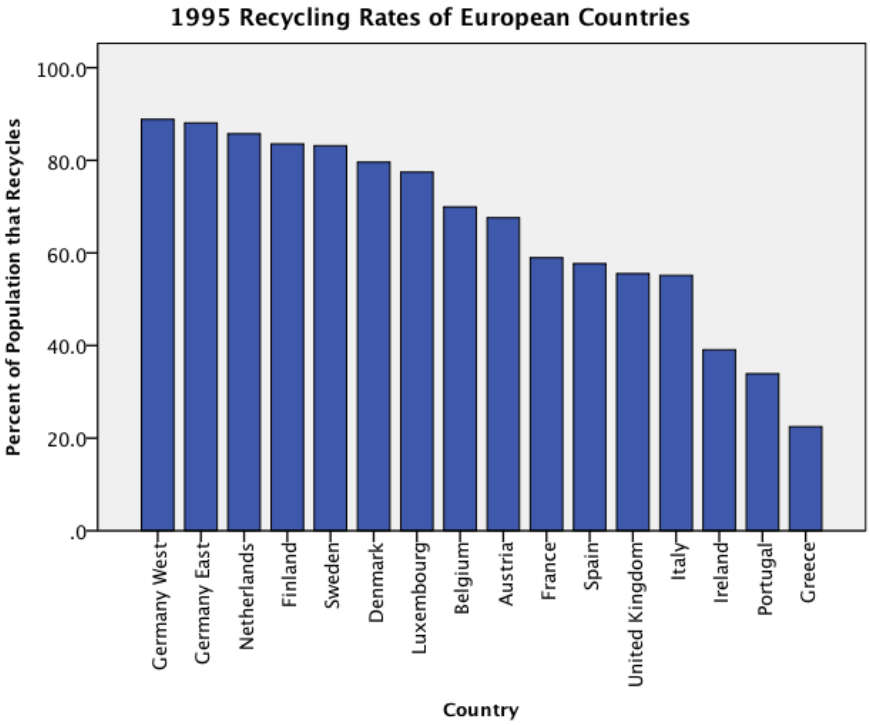
To contextualize recycling in Germany it is useful to compare Germany to other EU countries. The two bar charts below show the percentage of people who said they sort their trash when asked in Eurobarometers in 1992 and 1995.

FIGURE 1



Source: European Commission, Eurobarometer 37.0, March-April 1992, GESIS Data Archive: ZA2141

FIGURE 2



Source: European Commission: Eurobarometer 43.1bis, May-June 1995, GESIS Data Archive: ZA2639

It is clear that Germans, both from the east and the west, are among the likeliest of all Europeans to recycle. It is important to keep the high rate of German recycling in mind when investigating which factors influence recycling behavior. In a country where recycling is so prevalent, it is still important to ask why so many people recycle in the first place but also why some Germans do not recycle.

Before examining why certain people recycle and why others do not, one may ask why a person would think to recycle at all. The basic notion of recycling implies a scarcity in resources, regardless of the spatial reference of the scarcity, be it in a person's immediate surroundings, region, or country or in the world. Concerns about the use of resources and the quality of life in these various spatial realms are long established. A brief history of environmentalism is key to understanding how recycling fits into the picture.

CHAPTER 1: Brief History of Environmentalism

Pre-modern Environmentalism

The beginnings of environmentalism can be traced to the Industrial Revolution. In this time period cities began to grow beyond their previous limits and were in danger of drowning in their waste and smoke (Radkau 2011: 63). The problems of pollution and forest depletion also emerged as a result of the Industrial Revolution. In general, a new view of the relationship between man and nature surfaced.

New solutions to the problem of sewage had to be found, ones that avoided dumping waste into, and thereby polluting, rivers and bodies of water. The concepts of hygiene and public health became a movement in the nineteenth century. People realized that, for the reduction of disease and pests, waste could not simply accumulate in cities, so it was therefore typically deposited in landfills outside of cities. Already around the year 1900 the first waste incineration facilities came into being, leading to air pollution that would only later be fully recognized (Radkau 2011: 63-66). The focus on health and hygiene may not at first seem like an "environmental" matter; however, the connection between humans and nature was becoming clearer. People began to understand that the environment could no longer provide boundless resources or sustain an infinite amount of contamination without consequences.

The global movement to protect large areas of land began in the early 1900s. Uekoetter (2011: 14-16) points out that there were two key reasons this happened around the turn of the century . Not only was the destruction of modern industrial capitalism becoming clear, but governments also had better control of their countries with the advances that were being made in transportation and communication. In this case "not only were environmentalists looking for the

state to support their agenda, the state was also seeking something in return: funds, power, legitimacy" (Uekoetter 2011: 14-16).

Romanticizing about nature in literature and focusing on man's close connection to nature are themes that point to early environmentalism. Transcendentalist authors Ralph Waldo Emerson and Henry David Thoreau of the nineteenth century are often mentioned for their representations of nature (Radkau 2011: 16, 69). The desire to find peace between nature and man can be seen in their works. Uekoetter argues that this romanticism of nature in literature had little impact into the twentieth century. However, during the "saddle period" of the years around 1900 "in Wilhelmine Germany, we see the emergence of new organizations, new laws and institutions, and new mindsets that influenced environmental thinking for decades to come" (Uekoetter 2011: 15).

Environmentalism in Germany, particularly under the rubric of conservation, can be traced back to the first half of the twentieth century. In 1906 the Prussian government created the first state conservation department. Conservation was mentioned as a goal in the Weimar Constitution of 1919 (in Article 150) and was put into law with the Reich Conservation Act (Reichsnaturschutzgesetz) in 1936 (Jänicke 2009).

After World War II, in both East and West Germany, rebuilding and cleaning up were the first priorities, and environmentalism was pushed aside (Knabe 1993: 204). However, in 1957 the Water Management Act (Wasserhaushaltsgesetz) came into force in West Germany for the protection of water as a natural resource. Only later were more laws of this kind enacted in Germany (Jänicke 2009). Although these examples show that changes that occurred in the realm of environmentalism in Germany in the first half of the twentieth century, the face of environmentalism in 1960 looked quite similar to that of 1900.

Modern Environmentalism

In 1962 Rachel Carson published *Silent Spring*, the title of which alludes to the warning in the book: spring without birdsong due to pesticides such as DDT. Not only did she make the impact of DDT on wildlife clear, but she also explained the impacts DDT would have as it travelled the food chain, particularly that it could cause health problems in humans. (Reynolds 2010). Carson's book was an immediate success (Radkau 2011: 119). In contrast to problems such as deforestation or pollution, the effects of which as some would argue excluded an impact on human beings, Carson's presentation of DDT made it very clear "that if humankind poisoned nature, nature would in turn poison humankind" (Griswold 2012). Carson helped people realize that environmentalism was not only altruism, but also concern for the welfare of mankind.

In the late 1960s, particularly 1968, the student movements shook the western world. Although the student movements and environmentalism are not at all one and the same, it is important to recognize the links between the two. Some ideas of the student movements, such as rejecting consumerism and rapid technological advancement around this time were related to themes of the environmental movement. Furthermore, the anti-nuclear movement, which is viewed as a continuation of the student movements, was foremost a pro-environmental movement. Rudi Dutschke was not only a key leader of the German student movement, but also became an influential member of the Green Party. In fact, many former "68ers" supported the Greens in Germany after the upheavals associated with 1968 subsided (Radkau 2011: 156). In essence, the environmental movement took up the 1968 themes and applied them to the environment. Most strikingly, the nature of the environmental movement in Germany after the student movements was completely different than before.

Environmental historians only point to the 1960s as the beginning of the modern environmental movement but attempt to explain why the changes came about at that time. Many attribute the new ways of dealing with environmental problems, particularly mass protesting and "campaign style," to the larger wave of New Social Movements that emerged in the 1970s. The broad range of issues these movements covered included not only environmentalism but also the desire for sexual freedom, equality of men and women, minority rights, and peace. These ideals are distinct from issues that had long been on the table in politics, primarily class conflict and the distinction between the haves and the have-nots (Klein/Falter 2003: 26). Ronald Inglehart is well known for his proposed theory of post-materialism, which explains that the issues that became popular in the 1970s were signs of post-material values. In other words, because people were no longer as worried about being able to obtain life-essential goods, their causes of concern changed from a materialistic nature to a less concrete, social nature. Inglehart's theory is widely accepted as a profound explanation for the new range of social issues that appeared in the 1970s.

Uekoetter (2011: 22) argues that, "Inglehart's broad thesis continues to hold some relevance, but only as part of a more complex and diverse set of approaches." Uekoetter (2011: 23) proposes another reason for the emergence of environmentalism that fits in the German case very well, namely the "quest for *Sicherheit*" (German for "security, safety, and certainty"). As he points out, environmental problems, and even more so disasters such as Chernobyl, were a cause for insecurity among the public. In Germany, as opposed to in the United States, the government often took a progressive stance on solving environmental issues. Uekoetter (2011: 24) points to these issues as providing "an insecure state with a much-needed dose of legitimacy and certainty as to its enduring importance." He points out that after the second oil price shock in 1979, most western countries went into a more significant depression than after the first oil shock in

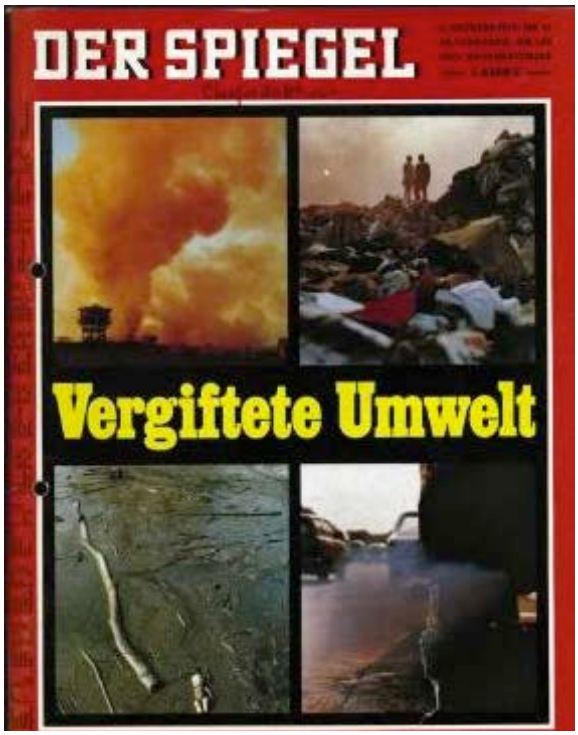
1973/74. In dealing with the economic crisis, changes of government can be clearly seen; he asserts, "as a reaction to the crisis of the early 1980s, environmentalism was to West Germany what neo-liberalism was to Great Britain and the United States, and state socialism to France" (Uekoetter 2011: 25). Looking at the German environmental movement as a source of security makes it also more understandable why the movement has been so resilient to the present day.

During the 1960s the nature of the environmental movement in Germany changed substantially. The German environmental movement until the 1960s could be viewed as rather conservative, certainly not liberal or radical. Environmentalism in Germany was primarily characterized by stability, "personnel in civic leagues and the conservation administration [that] remained constant for decades" and "old boys' networks" (Uekoetter 2011: 17). In contrast, in the 1970s and 1980s, there was fluidity in membership, women were taking on roles and, most importantly, a "campaign style" was adopted, a style which drew similarities to the student movement.

An evident characteristic of the modern environmental movement is the pendulum between various environmental issues. Uekoetter refers to the government's environmental policy after 1970 as having a "campaign style…with interest growing and shrinking according to highly unstable priorities among members of the political left and the media, making for constant shifts between issues, environmental and otherwise" (Uekoetter 2011: 17). Radkau (2011: 37) describes this phenomenon as "not only evolution, but also as a great deal of back and forth, circular and pendulum movement."[1] Regardless, there have always been issues that the environmental movement has focused on: limits of growth, energy, emissions, new health risks, nature, clean water, clean air, and peaceful sleep (Radkau 2011: 37). A useful depiction of the many directions the movement found can be seen on the cover of the well-known German

[1] Translations are my own.

weekly, *Der Spiegel*. On October 5, 1970 the first environmental cover page was published, titled “Poisoned Environment” (*Vergiftete Umwelt*). It shows four pictures: red clouds of smoke, a mountain of trash, driftwood and a puppet lying in a dried up body of water, and exhaust fumes from a line of cars. The choice to show four pictures instead of the more common single picture is telling; it seems as if the editor could not settle on one issue that was most important. Radkau argues that the environmental movement has not made more significant progress because of its multifaceted approach (Radkau 2011: 141-149). Nevertheless, the many issues taken up by the environmental movement also made it possible for progress to be made in many areas.



Source: http://www.spiegel.de/spiegel/print/d-43800873.html

In reaction to the many problems people were worried about in the late 1960s and early 1970s, the German federal government passed the *Sofortprogramm* (immediate action program) in 1970, which called for certain immediate reforms. The reforms addressed many environmental

problems, including noise, air and water pollution. In 1971 the first Environmental Policy (*Umweltprogramm*) was passed as a follow-up to the immediate reforms. Over 100 laws and regulations were put into place with this blanket reform (Sofortprogramm article from Friedrich Ebert Stiftung).

The environmental movement in the early 1970s also affected the practice of waste disposal. Waste was not a great concern until, as mentioned previously, cities increased in size after the Industrial Revolution. The system of waste disposal, primarily landfills but also including waste incineration, did not change greatly until worries again arose about the environment and the impact waste was having on it. Literature such as *The Limits to Growth*, a study published by the Club of Rome in 1972, made it clear that resources were not unlimited, especially compared to exponential population growth and increases in use of natural resources. With this in mind, the idea of trash as a resource emerged. Around the mid-1970s prices for raw materials were rising, and the corporate sector became interested. (Park 2004: 201-202) Nevertheless, time would pass before recycling became a common practice in Germany.

The blanket environmental measures of 1970 and 1971 also affected waste policy. For the first time waste management was considered a "public" responsibility, which should be run by the states (*Bundesländer*). In addition, laws provided new measures for dealing with hazardous materials. Previously landfills were simply trash that had been dumped in a certain area. The impact of waste on the environment was becoming clear, particularly the impact of leachate, the liquid from landfills, which seeps into ground water. On account of the laws passed, landfills became much more complex systems to deal with risks of contamination. The laws also contained measures of supervision. (Seewald 2006: 11-12) After having put this massive amount

of legislation into effect within only a couple of years, Germany began to lead the way in the legal environmental movement in Europe (Radkau 2011: 128).

After the student movements of the late 1960s various environmental citizens' initiative groups were formed. Thomas Scharf points out that until 1973 these groups were focused on many different issues in isolation from each other. Between 1973 and 1976 the issues addressed were connected within a broader context of environmentalism. Most importantly these groups began to collaborate on the regional and even national level. These groups were often formed in order to provide a larger force to be mobilized for protesting against the constructions of nuclear facilities in Germany. The national group *Bundesverband Bürgerinitiativen Umweltschutz* (BBU) formed in 1972 and was composed of almost 1,000 individual initiative groups. In such extra-parliamentary groups green politics was able to start to shift away from primarily local actions, and collaboration allowed the groups to have a larger voice (Scharf 1994: 2-3).

It would still take some time before the initiative groups would take on the shape of a political party. Scharf points to the major shift from movement to party as starting in 1977 when green and ecological lists were formed. Even though the candidates running for the green and ecological groups were not expected to win any districts, percentages of votes for these party lists could possibly send candidates to parliaments (Scharf 1994: 2-3). In 1977 and 1978 several politicians in the Federal Republic ran for state offices under regional green-alternative party tickets. Within these couple of years such parties had popped up in various Länder (states), such as the Niedersachsen "Grünen Liste Umweltschutz" (Green List for Environmental Protection) or the Bremen "Bremer Grüne Liste" (Bremen Green List). Finally in January 1980 the federal party (Bundespartei) the Greens (Die Grünen) was founded (Klein/Falter 2003: 37-41). In the

federal election on March 6, 1983, the Greens achieved 5.6 percent of the vote, achieving the 5 percent needed to get party candidates seats in the national legislature, the *Bundestag*.

The Green party, which actually started as a self-defined "anti-party party," integrated itself into the parliamentary process over the period of a decade (Scharf 1994: 4). The party faced some major problems in the 1980s, particularly division. Although the main issues of the Green party were "ecological and peace issues, the rights of social minority groups and women's issues," politicians of both neo-Marxists and conservatives were interested in these issues (Scharf 1994: 3). Regional factions of the party tended to lean a certain direction, which posed problems for the party's ability to function as a national party. The eco-libertarians and eco-socialists argued over ways in which the party should implement ecological legislation and over which parties the Greens should seek for coalitions. There were also two sides of dealing with the established political parties: the realists favored reforms and wanted to work within the existing system whereas the fundamentalists refused any forms of collaboration (Scharf 1994: 4-6).

Within the first few years of the party's founding, this internal squabbling did not seem to affect the party's electoral performance. The main support for the Greens came from young, well educated or student, members of the new middle class. Support was greater in the cities and lacking in groups such as pensioners, farmers and blue-collar workers.

In the early 1980s the German environmental movement shifted its focus to the newly publicized problem of its forests. New reports were showing that acid rain was causing *Waldsterben* (forest decline). All Germans, including conservatives, were worried about this problem. No longer nuclear energy but coal became the main antagonist of the environmental movement. Sulfur emissions were reduced so quickly that after a few years German forests were

no longer in danger; the calamity had been averted. However, this change gave rise to the complication of the Cry Wolf effect, which could dangerously undermine the voice of environmentalists or even the media in environmental topics. It would not be long, however, until an environmental disaster would occur that no one could deny (Radkau 2011: 238-239).

Unmistakable environmental problems of the 1980s led to a greater environmental awareness. On April 26th, 1986 the explosion and fire at the Chernobyl Nuclear Power Plant in present-day Ukraine changed history. The accident caused a massive amount of radioactivity to be released into the atmosphere, the cloud of which quickly covered Scandinavia and Central Europe. Estimates of deaths associated with the disaster range from six hundred thousand to one million. Fear of cancer spread through Europe and was exaggerated by speculation about the risk of leukemia in children (Radkau 2011: 501). According to Radkau, Chernobyl "activated and reactivated the anti-nuclear movement from Europe to as far away as Korea and Taiwan, and at the same time sped up the collapse of the Soviet Union" (Radkau 2011: 502). The first alarm of Global Warming sounded in the same year as the Chernobyl disaster. In 1987 scientists announced the first warnings of the hole in the ozone layer. According to Radkau, "the late 1980s and the early 1990s were in Germany as well as other countries a formative phase of environmental policy that lives on today" (Radkau 2011: 504).

In this time period waste policy in Germany was changing as well. In 1983 and 1984 waste incineration plants in West Germany were criticized, and protests occurred on two occasions in those years against such plants. Although the plants in Germany were often rather modern and collected their emissions, specifically the chemical dioxin, the way in which the chemical was later stored was questioned. It is important to note, however, that the incineration

plants were once viewed as a "solution" to the problem of waste management. With each problem that environmentalists seem to "solve," this "solution" later leads to new problems.

In West Germany around the time of reunification, a strong sense of environmentalism pervaded society. Environmentalism was not only visible in protest but was also acted out in people's homes through recycling. The movement even had a voice in state parliaments and occasionally in the national parliament with the Green party. This picture of West Germany's environmentalism can be contrasted with that in East Germany.

Environmentalism in East Germany

So far the German environmental movement after World War II has been summarized from a western perspective. The question then arises: did an environmental movement exist in Eastern Germany? The magazine *Der Spiegel* asked the Soviet author Valentin Rasputin the same question about the Soviet Union in 1985. He answered: "Yes, but in comparison to your Greens it is not organized but spontaneous. …To belong to this movement you need very little: you just have to remember and compare what our earth was like twenty or even ten years ago and what has since become of it" (Radkau 2011: 506). Even though an environmental movement as it existed in the west was illegal, a form of environmental movement did exist in East Germany. Although scientific reports were not released to show the extent of environmental problems, citizens noticed clearly visible changes in the state of the environment. Due to the burning of lignite, or brown coal, for energy, the air had a noticeably pungent smell (Radkau 2011: 521). East Germans were environmental because they noticed the problems that occurred when the environment was taken for granted.

The East German government did toy with environmental policy for a short time. In fact, "already in November 1971, fifteen years before West Germany, East Germany created a Department of the Environment; and on paper the environmental legislation appeared impressive" (Radkau 2011: 521). Propaganda in East Germany fought the throw-away society that had been spread from the West. This move can almost be seen as environmentalism; however, its origins lie in an attempt to reduce public consumption to meet the goals of economic planning. In each East German environmental policy it is clear that economic interests and goals always took precedence over ecological consequences (Knabe 1993: 262). This is evident from an example of waste policy discussed below.

From 1945 to the passage of significant legislation in 1971, East German environmentalists, primarily environmental researchers, experienced ambivalence towards their work. Although surprisingly significant amounts of research and publications were allowed, it is clear that the government maintained control over what was said in public at all times. After the first oil crisis in 1974 environmental advancements slowed down due to economic reasons. On November 16th, 1982 the East German cabinet adopted a resolution to make any data relevant to the environment a state secret. Radkau (2011: 523) claims that this resolution was "hardly less fatal for the East German environmental initiatives than fear of the Stasi, because effective environmental protests are in most cases essentially a matter of information." Without current research about the environment, East Germans were left to their own devices about the state of the environment, quite in contrast to West Germans whose media spouted environmental news alerts.

Environmental Protest in East Germany

Knabe (1993: 261) argues that the lack of information was not the primary reason for the East Germans' indifference to environmental problems. Rather, they lacked concrete opportunities to act because of the East German police state. Although information about the environmental movement abroad was not readily at hand, East German citizens learned of the West German environmental movement through television and various other means of communication. The knowledge they possessed of the West played a significant role in the East German movement (Radkau 2011: 520).

In 1980 the state Cultural Association (*Kulturbund der DDR*) founded the Society for Nature and the Environment (*Gesellschaft für Natur und Umwelt*, GNU). By 1989 the group had as many sixty thousand members. Membership was in fact voluntary. The growth of the GNU can in this way be seen as a piece of the environmental movement (Radkau 2011: 526). Membership in the GNU was one of the very few legal ways to be part of an environmental movement in East Germany.

There were a few other ways to be environmental legally. As I will later discuss, the state encouraged recycling by paying citizens a decent amount of money for certain items brought to recycling facilities. Clean up actions of forests took place as well to clear the areas of litter. Knabe (1993: 264) mentions that an elderly woman could receive a medal as a "Jugendfreundin Oma" for working with a group of Pioneers, the East German variety of scouting, to clean up an unused piece of land in the small town and to plant a garden. The line between legal environmentalism and disguised resistance was, however, rather blurry.

As with other forms of resistance in East Germany, churches took a leading role in supporting environmentalism, particularly from the late 1970s onwards (Bauerkamper, 108).

They encouraged members of church environmental groups to practice environmentalism in everyday life so as to not be obvious in their efforts. These circles created and handed out pamphlets and books, such as alternative cookbooks or tips for a more environmentally friendly lifestyle. In this way this network practiced simple ideas such as saving energy and water, taking recycling seriously, or repairing instead of replacing broken products as a form of protest, albeit secret (Knabe 1993: 304-305). The state would not have even approved church groups to meet to discuss these ideas because of their nature.

Other forms of protest were quiet but clear, albeit peculiar in comparison to open protests that existed long since in West Germany. In response to information from the West about *Waldsterben*, the dying of German forests, environmentalists planted trees. In theory this was an action that no one could have been against; nevertheless, the Stasi did occasionally intervene in this form of protest. Environmentalists were often activists in East Germany by leading tree-planting initiatives. These events even took on characteristics of a mass movement (Radkau 2011: 530). Bike demonstrations also began to define the East German environmental movement. The idea behind biking instead of protesting on foot was that it was much more difficult for the police to arrest the demonstrators. Radkau (2011: 532) explains that the East German police would not have been able to fit multiples bikes into the police cars along with the demonstrators and that leaving the bikes on the street would have gone against the propriety of the police. These examples show the necessity of ingenuity that was required for successful protest in East Germany.

Although it was very dangerous, there are a few other examples of environmental protests neither approved nor silent. Writing letters, particularly to newspapers, was a form of protest that in some instances had moderate success. In 1988 church-led environmental groups supported a

letter-writing campaign to government officials speaking out against a hazardous waste landfill near Schönberg that was situated over the groundwater supply. Research was done and the groups openly petitioned the government, but the government simply denied their claims. Only after the Honecker regime came to a close did environmentalists from West and former East Germany successfully demonstrate against the landfill. Also in 1988 a hazardous waste incineration plant near Schöneicher was making no effort to contain any of the byproducts, and public church-led protests not only led to some arrests but also brought attention to and created fears about the plant. Early 1989 the East German government was forced to comment on the situation, correcting "faulty information" and announcing technical advancements to the plant that would be made (Knabe 1993: 325-327). The timing of these two events is key; the instability of the East German government and the Soviet Union in general was unmistakable by this point, and one can surmise that this emboldened environmentalists.

Waste and Recycling Policy in East Germany

Waste treatment in East Germany did not always have the environment in mind. In the 1970s landfills began to be created in an organized fashion, as opposed to the "wild dumps" that prevailed before then. However, to reduce transport costs, the state often constructed landfills on land that should not have been used with respect to hydrological concerns. In addition, measures taken to seal the ground water sources and capture leachate proved to be insufficient due to their cost. Furthermore, waste incineration plants produced emissions without restrictions. Also, in contrast to the West German policy of separating biodegradable waste to be turned into mulch, this waste was collected with general waste and separated later, evidently polluting it with heavy metals and other contaminants. Nevertheless, this process separated more biodegradable waste

than would have otherwise been collected. A facility in Dresden that undertook this process was able to produce 25 tons of compost for agricultural use for every 30 tons of household garbage and only ten percent of the trash was deposited in the landfill (Knabe 1993: 153-154). Even though the waste policy may seem contradictory in relation to its impact on the environment, economic efficiency shines through as having been the deciding factor.

Recycling in East Germany functioned rather well. East Germans separated kitchen waste, glass, paper, textiles, iron and plastic from their general trash, due to the economic value of these items. At around 3000 stationary and mobile deposit facilities the recycling collection company abbreviated "*Sero*" (*Sekundärrohstofferfassung*) collected materials such as waste, paper, bottles and steel. Depending on the quantities of these items brought to the facility, *Sero* paid each household a certain amount of money each year. Because of the possibility to earn money by recycling, there was a great incentive for East German families to recycle as much as possible. By recycling East Germany was able to offset significant percentages of the raw materials needed and was thereby able to significantly reduce imports. In 1985 raw materials gained from recycled goods covered twelve percent of the overall demand of raw materials. Advances in industry production also allowed for a decrease in raw material demand while keeping the production constant. For the East German state, which was in financial ruin in the late 1980s, saving money was key. It is important to note, however, that the state implemented recycling, like all environmental policy in East Germany, only when it was deemed "economically reasonable" (Knabe 1993: 154).

In September of 1990 under the last Prime Minister of the GDR, Lothar de Maiziere, the state subsidies of *Sero*, the East German recycling program, were cancelled. An article published in the magazine *Der Spiegel* in mid-October 1990 stated that recycling rate went down to a tenth

of its previous amount ("Wie uff 'ner Kippe," *Der Spiegel*, 1990). Even though it is clear that without a program recycling dropped off rather significantly, it is difficult to determine how quickly the new recycling service company, DSD, was able to step in and what type of recycling system took its place in the meantime.

State of the Environment in East Germany after Reunification

Very little was known in the West about the state of the environment in East Germany. In October 1986, the first startling report about East German environmental problems was released (Radkau 2011: 489). Chernobyl as well as this report made it clear that the assumptions that had been made that socialism was the most effective way of environmental protection proved incorrect. It was not until the Iron Curtain came down that the West gained a true sense of the shocking environmental conditions in the East.

After the fall of the Soviet Union, it at first seemed as if the political and ideological vacuum would prove to be conducive to environmentalism. In reality however, the pure form of capitalism that was introduced did take into account its toll on the environment. Particularly once East Germany's economic situation became clear, namely increasing unemployment, and the enthusiasm that had been present after the fall of the Berlin Wall subsided, the economy was the center of attention (Radkau 2011: 505). This was not the first time that the economic situation acquired priority over environmental problems.

Quickly after the fall of the Berlin Wall, the German government shut down all nuclear power plants in former East Germany and halted the building of the plant in Stendal, not only for fears of a nuclear meltdown, but also because West German nuclear power plants had a surplus of energy that could be sold to the former East. This decision is yet another example of

"environmentalism" realized primarily because of its economic advantage to an influential group (Radkau 2011: 528).

Environmentalism in Unified Germany in the early 1990s

Both in response to limited resources and to limited landfill space, just after the reunification of Germany, recycling finally received more attention in policymaking. The packaging ordinance (*Verpackungsverordnung*) of 1991 supported the "polluter pays principle," meaning that industry was required to manage the further processing of packaging waste. Through this principle the government used financial incentives to force industry to innovate ways to reduce this waste. This landmark law forced companies that produced goods to be responsible for the sale or further processing of any packaging that would exist after the use of the product (Seewald 2006: 13-14). Not only were retailers required to have a mechanism for purchasers to return the packaging waste, but the law also set quotas for collection of the types of packaging waste (paper, glass, plastic). The lawmakers also included an interesting idea: if the retailers wished to do so they could form a company that would take care of accepting packaging waste and reusing it. The Duales System Deutschlands (DSD) was formed for this purpose in September 1990 in preparation for the law that would soon take effect.

To make sure that the producer pays for the recycling of packaging, DSD charges its producers for the amount and type of packaging that goes to retailers with an item. This creates an incentive for the producers to reduce the amount of packaging on goods. Secondary packaging, packaging that makes an item easier to sell such as a box around a tube of toothpaste, is now rarely found in Germany because it is not cost effective for producers. Materials that were difficult to recycle or more expensive (usually unusual forms of plastic) were often traded out for

packaging materials that were more cost efficient, because DSD would have charged much more to recycle a less-used material. In essence, producers no longer only manufactured products but were required to think about how the packaging on the item would later be recycled.

To keep up its part of the deal DSD acts as a "dual system" in picking up household garbage. So that two sets of infrastructure for trash pickup did not develop, DSD made agreements with the existing waste management services in communities across Germany to be responsible for the recycled waste. With the packaging ordinance of 1991, the government made it clear that it would no longer pay for recycling and that DSD would take on this responsibility. Even though recycling is taken care of to some degree by local waste management services, DSD is at least fiscally responsibly for the recycling of packaging waste. So that DSD can meet the quotas set by law, DSD tries to make recycling more convenient by policies such as implementing the "yellow bag" (Gelbe Sack) and increasing the availability of glass containers. (Glass was and is not picked up with curbside trash.)

The effects of the packaging ordinance of 1991 are complex. First, the government is no longer responsible for recycling. Also, incentives were created for the producers to reduce packaging waste, and recycling was made more convenient for consumers. For consumers it meant that it did not cost for recycling to be picked up, whereas non-recyclable trash did cost money. For some Germans this was a financial incentive to recycle. Furthermore, DSD had an incentive to take the measures mentioned above to make recycling more convenient for consumers.

Sorting trash (*Mülltrennung*), or recycling, became a practical way of being environmental in everyday life. Radkau (2011: 252) points out a huge shift that recycling brought to environmentalism: "From then on protection of the environment meant doing

something yourself and not reproachfully appealing to society." Today in Germany recycling is a strong cultural norm; someone who sorts trash incorrectly in a public place receives glares from others. It would be extremely difficult to measure how strong the norm of recycling was in the early 1990s. After the 1991 packaging ordinance recycling became more commonplace because it was more convenient and supported by national legislation.

The state of the environmental movement in politics is also an indicator of the movement's status in unified Germany. In the first national election after reunification in 1990 the Greens lost significant support, causing them to change their strategy. Having refused to merge with the East German Green party and having taken a stance against German reunification, the Green party had not been able to make the 5 percent hurdle. About a third of their support of 1987, or more than half a million votes, went to the SPD. In September 1991 several civil rights movements of East Germany formed the Alliance 90. In the spring of 1992 the Alliance 90 started negotiations with the Greens, which ended in a merger of the two parties in 1993. The party still remained a predominately western party and was renamed "Alliance 90/Greens." Hans-Georg Betz argues that the party supported European integration, a common European currency, and was more favorable towards immigrants and refugees than supporters of any other party in Germany. The party's merger gave new life, primarily in the form of votes, to the Greens.

In the national election in 1994 the Alliance 90/Greens received 7.3 percent of the vote, making an impressive comeback. In the west there were large gains but in the east the party had lost support in most regions from the already low standing in 1990. Betz points out that the lack of support of the Alliance 90/Greens in former East Germany was largely due to a growth of "GDR-nostalgia" and the Alliance 90's opposition towards the GDR past. The new party's

primarily western identity was also a possible reason. The party's stance towards immigration and European identity was also more in line with traditional western more than eastern thinking (Betz 1995: 214-16).

Although voting for a Green party does not necessarily mean the voter also participates in environmental behavior or recycles, the strength of Green politics can be an indicator of the broader environmental movement within a country. The Green party is one of the newest political parties that regularly participates in the government. It is important to point out that the party made it into the national legislature quite rapidly, only three years after it was founded. It is also key that the party did not even receive five percent of the vote in the first election after reunification. The voting divide between former East and West Germany was also visible in citizens' expectations for the government. Environmentalism is a traditionally post-materialistic value, and during the very uncertain times shortly after reunification for all of Germany and still in 1994 in former East Germany, it is clear why for many environmentalism might not have been the top priority.

The environmental movement in Germany has gone through many changes, the most influential being the student movements and the following environmental awakening. In the early 1990s in unified Germany, a picture emerges of a country environmentally aware but also in transition.

CHAPTER 2: Literature Review and Hypotheses

Recycling Behavior

A very important consideration to the statistical portion of my study is the creation of the dependent variable. Often studies will examine the impact of a number of independent variables on "pro-environmental behaviors" in general. For example, Korfiatis, Hovardas, and Pantis, (2004: 567), in their study examining five transitioning European countries, used a scale of ten pro-environmental behaviors based on how often the activities were performed. Many researchers argue, however, that different pro-environmental behaviors can only be explained by different sets of independent variables. In their study on household energy usage, Black, Stern and Elsworth (1985: 5) found that different types of behavior are often influenced by different variables. Stern (2000: 417) states that different types of causal variables are important, depending on the particular behavior. He goes further to give the admittedly obvious, but helpful explanation that "behaviors that require specialized skills are likely to be strongly influenced by whether or not one possesses those capabilities" (Stern 2000: 418). And finally, McKenzie-Mohr et al. (1995: 140) in their study on various pro-environmental behaviors argue that each form of responsible environmental behavior has a separate set of predictors. Based on the findings of past scholars, this research is focused on a single pro-environmental behavior, recycling. Recycling is an extremely important behavior among those that could be studied because it is often found to be a behavior that is a starting point for other pro-environmental behaviors.

Environmental Concern

In their research on citywide curbside recycling, Oskamp et al. (1991: 500, 508) determine that attitudinal variables, particularly "belief in the seriousness of environmental problems," along with environmentally responsible behaviors are only slightly related. Much research shows attitudes and behavior to have very little correlation (Dunlap and Van Liere 1978: 17; Oskamp et al. 2001: 497; Gamba and Oskamp 1994: 606); since these studies test environmental concern as an attitudinal variable, this finding may be more representative of the effect of environmental attitude than of concern.

The link between environmental concern and behavior also has substantial support. Gamba and Oskamp (1994) study the factors that influence "comingled curbside" recycling. They find that general environmental concern, determined by a five-item scale, explains the 36% variance in environmental behavior, the greatest amount of variance explained among the variables tested (Gamba and Oskamp 1994: 604). McKenzie-Mohr et al. (1995: 143) also find that "frequency of worrying about the environment" is one of three predictors most frequently associated with different types of pro-environmental behavior; viewed from their perspective, environmental concern is a common factor of various ecological behaviors. Guerin, Crete, and Mercier (2001: 207) examine recycling behavior in 15 European countries and find global environmental concerns to have a significant influence on recycling behavior.

Similarly, environmental concern is often found to be a significant *indirect* factor of pro-environmental behavior. In their meta-analysis on determinants of various pro-environmental behaviors, Bamberg and Möser (2006: 15) formulate a "norm-activation model" in which moral and personal norms directly determine behavior. In that theory, they state that awareness of and

knowledge about environmental problems are probably important cognitive preconditions for developing moral norms.

In line with this research I hypothesize:

H1a: There is no significant relationship between recycling behavior and environmental concern.

H1b: As environmental concern increases, so does recycling behavior.

Ideology

Ideology, or political orientation is not surrounded by nearly as much controversy as environmental concern. By examining environmental behaviors in five transitioning European countries, Korfiatis et al. (2004: 579) find that ideological beliefs were not significant predictors in any subsample. They conclude that general political attitudes of the respondents were not significantly related to environmental behavior (580). Guerin et al. (2001: 207) similarly state that traditional ideological orientation did not seem to have an impact on participation in household waste recycling.

Although not often found to be important, I still include ideology in this study because in Germany between 1992 and 1995, leftist parties, including the Green party, were more likely to be associated with putting forth programs, funding, or regulations that would be beneficial to the environment. The same people that are concerned with the environment enough to recycle might also be likely to vote for parties that they believe will be able to do greater good for the environment through political and public approaches. For this reason, a positive relationship between left-leaning ideology and recycling might be found.

With this in mind, I articulate the following hypotheses:

H2a: There is no significant relationship between recycling behavior and ideology.

H2b: The more ideologically left-leaning a person is, the more likely he or she is to recycle.

Local Activism

Guerin et al. (2001: 205) found local activism, defined by membership in an ecological association and participation in a group clean up activity, to be the most significant person-level variable in determining household recycling behavior.

Participation in local activism, such as a group clean up activity of a beach or a park, would logically increase a respondent's likelihood of sorting waste at home. The relationship between these activities is as follows: if a person is willing to take the time to participate in such an activity, it would be rather hypocritical if that same person did not carry on the much easier task of recycling in his or her own home. Furthermore, if a person attended such a group clean up activity even if not already relatively environmentally aware, by participating in the group clean up, the ideas of helping the physical environment would in theory pervade that person's mind as far as his or her personal actions are concerned.

Similarly, local activism, in the form of membership in an ecological association, would theoretically have a similar impact. As a person chooses to be a member of such an organization, even if encouraged to do so by someone else, that person would be more likely to examine his or her own actions within the immediate surroundings, such as sorting waste to recycle.

Participating in a demonstration against an environmentally harmful project is also a means of activism. Such an event would be likely to make the individual more aware of other activities that are harmful to the environment, perhaps leading the individual to recycle at home.

Based on this logic, I propose the following hypotheses:

H3a: If a person is a member of an ecological organization, he or she is more likely to recycle.

H3b: If a person participates in a local clean-up initiative, he or she has an increased chance of recycling.

H3c: If a person has participated in a demonstration against a project that could harm the environment, he or she is more likely to recycle.

Environmental Trade-offs

Korfiatis et al. (2004) argue that, particularly when looking at countries experiencing economic strain, such as the countries they study that are transitioning from Soviet satellites to autonomous countries, an extra independent variable can be useful. They created an "environmental-trade off" section that analyzes the respondents' perceived evaluation of environmental protection in relation to its possible effects on cost of life, job opportunities, or economic development. The questions they used to develop a scale asked about opinions on the introduction of costs such as fees, taxes, higher prices of goods and state spending all for the benefit of the environment; also the preference for priority of either state spending for conservation or job creation was included. Korfiatis et al. (2004: 569-579) argue that perceptions of environmental trade-offs are important determinants in four of the five subsamples of pro-environmental behaviors. Environmental trade-offs are particularly interesting in this study because of the transition period that occurred in East Germany in the early 1990s, similar to that of the countries that Korfiatis et al. studied. It makes sense that people who believe that protection of the environment should have priority over economic development would be more

likely to recycle than those who believe that the economy is more important. For people with the environment as a priority, it would be natural to also expend the energy to recycle in his or her home.

Based on the study by Korfiatis et al., I hypothesize that:

H4a: There is no significant relationship between recycling behavior and environmental-trade offs.

H4b: If a person believes that the environment should be protected as much as the economy or even over the economy, he or she will be more likely to recycle.

Perceived Effectiveness of the Government

Blamey (1998: 677) discusses the activation of environmental norms and suggests that individual "recycling norms" are more likely to be activated when it is perceived that other citizens and the government are "doing their bit." He goes further in saying, when contributions are sought from a collective, and government has some involvement in the proposal, trust in government can be expected to play a major role in influencing individual decisions (Blamey 1998: 686). Guerin et al. (2001: 207) use this idea in their model and find respondents' perceptions of the government's effectiveness on these issues to have a significant effect on participation in recycling.

On the other hand, it could also be argued that persons who believe that the government, at any level, is not doing its part could be more likely to recycle in order to make up for the lack of effort put forth by public bodies.

Based on these ideas I propose the following hypotheses:

H5a: People who believe that the government is effective with respect to environmentalism will be more likely to recycle because they feel that their efforts will make a difference with the support of the state.

H5b: People who believe that the government is ineffective will be more likely to recycle because they feel that they need to make up for the government's lack of responsibility in their own actions to help the environment.

Region

In my study I expect variation among various regions, particularly among various states (*Bundesländer*) or along the customary East-West division. Examining Germany in 1992 and 1995 should show how quickly recycling behavior changed after reunification and after the implementation of the DSD and the new waste legislation. I had at first falsely assumed that recycling did not exist to a large degree in East Germany before reunification; however, since this is not true, I hypothesize that there will be variation between the two regions but not because East Germany was recently introduced to recycling, but rather because in the midst of reunification, the transition between the collapsed *Sero* program and the DSD would have been rockier than in former West Germany. I further hypothesize that the distinction between former East and West Germany will become less pronounced by 1995, but based on the *Mauer im Kopf* theory, recycling rates will remain distinct in 1995.

With this in mind, I hypothesize that:

H6a: Former West Germany will have a higher recycling rate than former East Germany in 1992.

H6b: The difference between the rates in the two regions will decline over the three years.

H6c: Former West Germany will have a higher recycling rate than former East Germany in 1995.

Community Size

Many studies done in the United States only encompass a single town or region and often find those living in larger cities to be more likely to recycle. This is more likely due to the fact that recycling capacities are much more convenient in the United States in larger communities. In Germany, however, recycling facilities are located in every large city but also in every imaginable *Dorf* . Thus, people who live in apartments, which is common in large cities, are actually less likely to recycle than those in small- and medium-sized cities.

Based on this theory, I propose the hypothesis that:

H7: People living in large cities will be less likely to recycle than those living in medium- and small- sized communities.

Demographics

Demographics are found to have an extremely varied connection with pro-environmental behavior. Oskamp et al. (1991: 197) find that socio-demographic variables account for only a small portion of the variation in conservation behaviors. Similarly Gamba and Oskamp (1994: 604)) find no significant contribution of purely demographic variables, such as gender, education, or age (as opposed to structural demographic variables). Stern (2000) presents socio-demographics in quite a different light, as "indicators or proxies for personal capabilities" that

are necessary for participation in pro-environmental behaviors. For example, he mentions that a behavior positively associated with income and "White race" actually points more to the fact that environmental citizenship depends on an individual's social and economic resources (Stern 2000: 417). Each of the socio-demographic variables to be tested is further examined below.

Gender

In their study of five transitioning European countries, Korfiatis et al. (2004: 581) find that "in the few cases where sex was a significant individual predictor, the stronger pro-environmental behavior of women was indicated." This finding leads to the conclusion that if gender is significant, although it may not be due to the low degree of significance of socio-demographic variables in general, women will probably be more environmental.

Based on the findings of Korfiatis et al. (2004) as well as Oskamp et al. (1991) and Gamba and Oskamp (1994) as mentioned above, I derive the following hypotheses:

H8a: Women are more likely to recycle than men.

H8b: There is no significant relationship between recycling behavior and gender.

Income

The most common association with income is that it produces a positive effect on pro-environmental behavior. Usually if a person has more wealth, he or she will be more willing to spend money or time on participating in pro-environmental behavior. Along the lines of these more traditional findings, Gamba and Oskamp (1994: 604)) find that household income contributed significantly to recycling behavior.

Korfiatis et al. (2004: 581), however, found that in the five transitioning European countries, income had a negative effect. This is a more likely explanation for the case of Germany, because of the costs involved for those who do *not* recycle. As Hines, Hungerford, and Tomera (1986: 7) mention in their meta-analysis on pro-environmental behavior, situational factors such as income may also increase the incidence of responsible environmental behaviors when the intent is to save money and to collect the incentives offered in association with reduced consumption. Although their study examines energy consumption, the premise should hold true in Germany, where unsorted trash is picked up and charged by weight.

Based on research and this circumstance, I hypothesize that:

H9a: A person with a higher income has an increased chance of recycling.

H9b: A person with a lower income has an increased chance of recycling.

Education

Oskamp et al. (2001) found education to have a positive relationship with recycling, meaning that the more highly educated a person is the more likely he or she is to participate in environmentally friendly behaviors. A positive relationship of education is common; however, in their work, Korfiatis et al. (2004: 581) note the contrast between their findings and the norm when stating the "negative role" education plays in their findings about five transitioning European countries.

Based on this past research, I propose the following hypotheses:

H10a: If a person is more highly educated, he or she has an increased chance of recycling.

H10b: Education does not have a significant relationship with recycling behavior.

Age

Age has more complicated implications on determining pro-environmental behaviors. Youth is often associated with the trend of environmentalism (Oskamp et al. 2001: 496); however, many young people do not own homes, a major factor in recycling behavior (Guerin et al. 2001: 207). The Korfiatis et al. study (2004) also found strange results with respect to the influence of age on environmental behavior. Contrary to the general negative association between the two, meaning that younger participants are more likely to recycle, they found a positive association between age and recycling behavior (Korfiatis et al. 2004: 581). This result could be due to the failure to control for home ownership.

Based on their research, I generate the following hypotheses:

H11a: A younger person is more likely to recycle.

H11b: An older person is more likely to recycle.

As the current research shows, although socio-demographics are interesting, even correlated with pro-environmental behaviors, they are not found to explain a very large degree of variance in pro-environmental behaviors. For example, in their article analyzing energy conservation behavior, Black et al. (1985: 16) find that "demographic and socioeconomic variables often limit behavioral choice but rarely determine choice in any positive way." It would make sense that this point would hold true also for recycling behavior, and their point may help in understanding the small impacts of demographic variables. Nevertheless, these variables will be included to investigate their hypothesized small impacts. A list of the hypotheses introduced in this chapter is included in the appendix on page 79 for the reader's convenience.

CHAPTER 3: Data and Analysis

To study recycling behavior in Germany in 1992 and 1995, I use statistical research to test the hypotheses I outlined in Chapter 2. With the use of SPSS software, I provide descriptive statistics for each independent variable and test the impact of each independent variable on recycling behavior.

The Eurobarometer surveys include over 100 questions each, of which a handful are used for this analysis. The European Commission conducted the Eurobarometer surveys, 37.0 and 43.1, in March and April of 1992 and May and June of 1995, respectively. Although the surveys were administered in most European countries, I narrowed down the datasets to participants from Germany.

The dependent variable in this study, recycling behavior, is based on the response to this question: "Which, if any, of these things have you ever done?" One of the options on a list was "Sort out certain types of household waste (glass, papers, motor oil, batteries, ...) for recycling." Disappointingly, the study did not inquire as to how often the individual recycles. This data would have given the dependent variable more variation. Also, the survey only asks if the activity was "ever done," regardless to if the respondent had recycled for years or only once. Nevertheless, this variable gives us a picture of those people who are at least willing to be active at recycling, even if they do not always do so.

The survey questions that were used for each of the independent variables are rather straightforward. I measured environmental concern with variables that asked about the degree to which a person worried about a list of environmental problems such the disappearance of tropical forests" or "the destruction of the ozone layer." Ideology was measured on a 1 to 10 scale, on

which the respondent chose a box from far left to far right. Interviewers asked about activism in the same way as recycling, with the option of having done it before or not. The question for environmental trade-offs was different for the two years; however, the general idea was to see to what extent the environment is a priority over the economy. Respondents selected a number on a scale for the perceived efficiency of the five levels of government, which ranged from world to local level. To determine the region, participants answered whether he or she lived in former East or West Germany. The population of the respondents community of residence was also a question on the surveys. Gender, education, income, and age were all determined by the questions that are included in every Eurobarometer survey with a whole section of socio-demographic questions. Thankfully, the wording of most of the questions was the exact same way in the 1992 survey as in the 1995 one. The only exceptions are the scale for efficiency of public bodies and the options for community size. Because the majority of the questions were the same, and the rest could be altered even if somewhat differently worded, the surveys make for very good comparisons of the years 1992 and 1995. Because of this congruency, the surveys themselves should not have skewed the results.

Descriptive Statistics and Cross Tabulations

Descriptive statistics provide a numeric overview of the independent variables. Particularly, mean comparisons show the recycling rates for groups, which are based on their answers to the question for a given variable. Not only is it then possible to compare the average for a particular type of person, for example an "ideologically left-of-center person," but it is also possible to see how that group's recycling behavior changed over the course of three years.

Descriptive statistics for the dependent variable are also very helpful. In 1992, 83.9

percent of the German population sorted waste to be recycled, whereas 88.7 percent recycled in 1995. Eurobarometer surveys are available for many years and many different questions are asked. In other Eurobarometer surveys similar questions about sorting waste to be recycled were asked in 1999, 2002, 2007 and 2011. The reported recycling rates for Germany for these years are listed in Table 1 below. The changes in the wording plausibly caused some of the difference in the reported rates. For this reason, Eurobarometer datasets that contained a different question about recycling could not be used. Furthermore, the 2002 dataset (EB 58.2) could not be used for further analysis due to the lack of other questions used to determine independent variables. At the same time, the 2002 data does show that recycling rates decreased from their 1995 levels. Although only 1992 and 1995 recycling rates are used in this study, this comparison allows for an examination of post-unification recycling. There is almost a five percent increase in three years, and it is necessary to look at the changes in the independent variables over time to understand why recycling behavior increased.

TABLE 1
Self-Reported Recycling Rates in Germany 1992-2011

Year and Eurobarometer Study	(Pan-) Germany	Former West Germany	Former East Germany	Wording of Question and Answer Options (see footnotes)
1992 EB 37.0	84	89	79	A[2]
1995 EB 43.1bis	89	89	88	A
1999 EB 51.1	94	93	95	B[3]
2002 EB 58.2	81	84	79	A
2007 EB 68.2	68	68	69	C[4]
2011 EB 75.2	75	72	79	C

Cross tabulations are another statistical measurement that allows researchers to examine the statistical significance of a relationship between the dependent variable and an independent variable. Cross tabulations produce a variety of statistics. The Pearson chi-square value is a measure of the likelihood that the relationship is not explained by chance; the larger this value, the less likely the null hypothesis is correct. The P-value is associated with the Pearson chi-square value and measures the percent chance that the relationship present could be explained by chance. To be statistically significant, the P-value should be lower than .05, or 5 percent. The Somers'd value ranges from -1 to +1. Zero reflects no relationship, a positive value means a positive relationship, and a negative value represents a negative relationship. Somers'd is used for ordinal variables. For dichotomous variables, however, Lambda and Cramer's V are needed.

[2] A (1992, 1995, 2002): "Which, if any, of these things have you ever done?" "Sort household waste (glass, papers, motor oil, batteries, etc.) for recycling" (Mentioned, Not Mentioned)
[3] B (1999): "Do you regularly…?" "Sort your domestic refuse" (Yes, No, Don't Know)
[4] C (2007, 2011): "Have you done any of the following during the past month for environmental reasons?" "Separated most of your waste for recycling" (Mentioned, Not Mentioned)

Lambda is a measure of how much a variable can add to the predictive quality of a model. If there is little variation among one of the variables, however, it is often zero, which does not necessarily mean the variable does not add to the model. Cramer's V is a measure of association that ranges from 0 (no relationship) to 1 (perfect relationship) and is used when Lamda is not helpful, as is often the case in this study (Pollock 2005: 135-136).

Table 2 below gives the average recycling rates for different amounts of concern for various environmental problems. For the most part, as worry about any of the environmental problems listed decreases, so does recycling behavior.[5] Even though it appears that as concern increases, recycling behavior increases as well, from this table it is not possible to tell whether or not this relationship is statistically significant.[6]

TABLE 2
Recycling Rates for Levels of Concern for Environmental Problems

	Year	Pollution	Tropical Forests	Ozone Layer	Use Up Resources	Global Warming	Extinct Species	Average
Very worried	1992	86%	86%	85%	85%	85%	N/A	85%
	1995	91%	91%	91%	89%	92%	91%	91%
Somewhat worried	1992	85%	83%	83%	85%	83%	N/A	84%
	1995	90%	88%	88%	90%	87%	88%	88%
Not very worried	1992	76%	74%	77%	82%	82%	N/A	78%
	1995	83%	74%	71%	85%	76%	79%	78%
Not at all worried	1992	57%	40%	67%	75%	38%	N/A	55%
	1995	82%	72%	65%	87%	73%	78%	76%

Table 3 shows the measures of association for environmental concern. Looking at the p-values, it is clear that most of the variables were statistically significant.[7] Some of the variables also add a decent amount to the predictive power of the model for 1995, particularly "tropical forests" (7.2%), "ozone layer" (8.3%), and "global warming" (8.6%). In 1992, however, these

[5] A very small number of people said that they were "not at all worried" about these problems, so the percentage for that category may be skewed.
[6] Descriptive statistics only show trends between independent variables and the dependent variable but do not measure if the independent variables are statistically significant in their effects on the dependent variable.
[7] This holds true except for the "ozone layer" variable in 1992 and "use up resources" in both years.

variables do not seem to add as much to the predictive ability, with tropical forests being the most important, adding 5.5% to the predictive power of the model. The results are in line with the hypothesized positive relationship between environmental concern and recycling (H1b).

TABLE 3
Cross Tabulation of Environmental Concern and Recycling

	Year	Pearson Chi-Square	P-value	Somers'd
Pollution	1992	23.383	.000	.043
Risk	1995	18.59	.000	.043
Tropical	1992	16.481	.001	.055
Forests	1995	49.04	.000	.072
Ozone	1992	5.512	.138	.034
Layer	1995	61.40	.000	.083
Use Up	1992	4.423	.219	.030
Resources	1995	7.49	.058	.016
Global	1992	16.072	.001	.043
Warming	1995	53.70	0.00	.086
Extinct	1992	N/A	N/A	N/A
Species	1995	25.51	.000	.053

Ideology is much simpler to examine because it is a single variable. There is not much variation in recycling behavior between the groups, as shown in Table 4 below. It is interesting, however, that those who call themselves "center" ideologically actually have the highest recycling behavior, even though it is quite a marginal advantage. Also interesting is the fact that between 1992 and 1995 the "right" has the most marked increase in recycling rates. Nevertheless, the cross tabulations in Table 5 do not show ideology to be statistically significant for either year.[8] These results support the null hypothesis (H2a) that no relationship exists between ideology and recycling behavior.

[8] This is shown by the high p-values (.2 and .5), which both show that random sampling error is the more likely cause of the Pearson chi-square results.

TABLE 4
Recycling Rates for Ideological Leanings

Ideological Leaning	Year	Recycling Rates
Left	1992	85%
	1995	88%
Center	1992	86%
	1995	90%
Right	1992	82%
	1995	89%

TABLE 5
Cross Tabulation of Ideology and Recycling

Year	Pearson Chi-Square	P-value	Somers'd
1992	3.223	.200	-.027
1995	1.31	.520	.013

Activism includes three variables that are used to measure it. As shown in Table 6, people who were members in an ecological organization, had participated in a local clean-up project for the environment, and had demonstrated against a project that would hurt the environment each had higher recycling rates than those who had not.[9] The cross tabulation results in Table 7 show that membership in an ecological organization is not statistically significant in either 1992 or in 1995.[10] On the other hand, helping with a local initiative to clean up a public space is found to be statistically significant.[11] Demonstrating an environmentally destructive action showed the predicted positive relationship in 1992 but was not statistically

[9] Membership in an ecological organization boosted recycling rates by a marginal two percentage points in 1992, but by five points in 1995. Participating in a local clean-up project boosted recycling rates by ten percentage points in 1992 and by seven points in 1995. Demonstrating against a project that would hurt the environment added much more to the chances of recycling in 1992 (7 points) than in 1995 (2 points).
[10] These findings suggest a null hypothesis in contrast to H3a, that being a member of an ecological organization increases the chances of recycling.
[11] It adds 10% in 1992 and 8.2% in 1995 to the predictive power of the model. These results support H3b, that having a local clean-up project increases the chances of recycling.

significant in 1995.[12] Although the activism variables are not always significant, they do show a trend of boosting recycling rates when significant.

TABLE 6
Recycling Rates for Having Done or not Done Measures of Activism

Response to Having Done Activity		Membership in Ecological Organization	Participating in Local Clean-Up Project	Demonstrating an Environmentally Harmful Project
Yes	1992	86%	92%	90%
	1995	84%	95%	87%
No	1992	84%	82%	83%
	1995	89%	88%	89%

TABLE 7
Cross Tabulation of Activism and Recycling

	Year	Pearson Chi-Square	P-value	Lambda	Cramer's V
Membership	1992	.576	.448	.000	.016
	1995	2.634	.105	.000	.036
Initiative	1992	22.059	.000	.000	.101
	1995	13.985	.000	.000	.082
Demonstrate	1992	6.523	.011	.000	.055
	1995	.431	.512	.000	.014

The next variable, economic and environmental trade-offs, shows varying results for 1992 and 1995. In 1992 only 57 people (out of 2177 who were polled) believed that economic development should get higher priority than concerns about the environment. This group has a very low recycling rate, 61%. In 1992 there is only a slight difference between recycling percentages for the last two answers (Economic development must be ensured but the environment protected at the same time, Concerns about the environment should get higher priority than economic development). In 1995, this variable has almost no variation, with only a

[12] These findings suggest a positive relationship between having demonstrated against a project that could harm the environment and recycling.

one-percentage point change among the choices.[13] Perhaps in 1995 the push to be environmental, including the practice of recycling, no longer depended on the economic situation. These descriptive statistics support the null hypothesis.[14] Cross tabulations show that economic trade-offs for the benefit of environmental protection were statistically significant in 1992 and added 5.4% to the prediction. [15] This variable was not statistically significant in 1995.[16] This might be due to the fact that the economic situation was more stable in 1995 than it was in 1992, right after reunification.

TABLE 8
Recycling Rates for Importance of Economic vs. Environmental Priorities

	Year	Percent that Recycles
Economy is Main Priority	1992	61%
	1995	89%
Both are a Priority	1992	84%
	1995	89%
Environment is Main Priority	1992	86%
	1995	90%

TABLE 9
Cross Tabulation of Economic vs. Environmental Priorities and Recycling

Year	Pearson Chi-Square	P-value	Somers'd
1992	24.105	.000	.054
1995	.021	.990	.001

[13] It is possible that this change is also due to the somewhat different wording in 1995. In 1995 the first option is based on environmental protection "only if it does not slow down economic growth." A much larger group (594 of 2066) concurred with this statement.
[14] The null hypothesis (H4a) states that there is no significant relationship between perceived economic and environmental trade-offs and rates of recycling.
[15] This is a step in the direction of the hypothesis (H4b) that a person who believes that the environment is a priority alongside the economy or that the environment is the main priority that person will be more likely to recycle.
[16] This supports the null hypothesis (H4a) that no significant relationship exists between economic and environmental trade-offs and recycling.

As shown in Table 10 below, descriptive statistics reveal that people who believe public bodies to be efficient recycling less. Particularly, people with a negative perception of the efficiency of World and EC/EU governments tend to have higher rates of recycling, whereas no clear tendencies for the perceptions of national, regional, and local governments appear.[17] Perhaps world and EC/EU public bodies are more visible in the media and their implemented projects.

TABLE 10
Recycling Rates for Levels of Perceived Efficiency of Public Bodies

1992	World	EC	National	Regional	Local
Very Efficiently	77%	76%	80%	81%	78%
Somewhat Efficiently	81%	84%	83%	86%	88%
Not Very Efficiently	85%	85%	85%	85%	85%
Not At All Efficiently	87%	86%	83%	75%	74%
1995	World	EU	National	Regional	Local
Efficiently	83%	85%	89%	89%	89%
Not Efficiently	91%	90%	90%	89%	89%

The belief in the efficiency of various public bodies in helping the environment is for the most part statistically significant in the cross tabulations.[18] The belief that the world and EC or EU government levels are efficient decreases the likelihood that a person recycles.[19] Interestingly people who believe that the national, regional and local governments are efficient have higher recycling rates.

[17] There is a lack of variation at these levels.
[18] The national level for both years and the regional and local levels for 1995 are exceptions.
[19] In 1995 the perception of the world public body actually adds 8% to the predictive ability. In 1992, however, people who believe in the efficiency of regional and local governments toward the environment have an increased chance of recycling. In 1992 at these two levels the variable adds 1.8% and 2.5% to the prediction.

TABLE 11
Cross Tabulation of Perceived Efficiency of Public Bodies and Recycling

	Year	Pearson Chi-Square	P-value	Somers'd
World	1992	12.497	.006	.042
	1995	20.65	.000	.080
EC/EU	1992	9.564	.023	.032
	1995	7.48	.006	.048
National	1992	4.365	.225	.020
	1995	.213	.644	.007
Regional	1992	14.220	.003	-.018
	1995	.003	.958	-.001
Local	1992	30.548	.000	-.025
	1995	.003	.958	-.001

The bar graphs of regional variation of recycling participation are presented in Figure 1 below. In 1992, the "gap" between East and West German recycling rates was 9.6 percent. In 1995, however, this gap seems to have completely closed, with only a 1.2 percentage point difference remaining. Whereas the West German recycling rate only increases by half a percent, East German recycling goes up by 8.9 percentage points. These findings certainly support regional hypotheses. The massive question remains of why the gap in recycling rates between these two regions narrowed so quickly.

FIGURE 3
Regional Variation in Recycling Rates

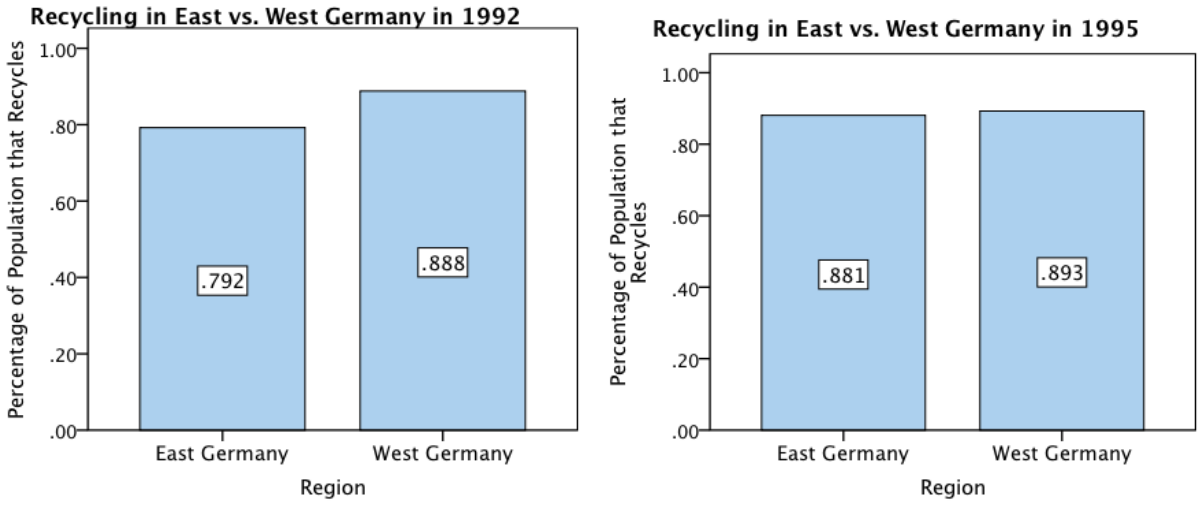


Table 12 shows the values of the measures of association of the cross tabulations for the independent variable region, particularly the east-west divide in Germany. The divide is statistically significant in 1992 and adds a great deal to the prediction. On the other hand, in 1995 the east-west division is no longer statistically significant. This may point to the rapidly merging societies where the lines are no longer as distinctive after three years.[20]

TABLE 12
Cross Tabulation of Living in West Germany and Recycling

Year	Pearson Chi-Square	P-value	Lambda	Cramer's V
1992	36.930	.000	.000	.130
1995	.747	.387	.009	.019

[20] These findings support all three hypotheses (H6a-c) about the east-west divide, meaning that West Germany had higher recycling rates than East Germany both in 1992 and in 1995 but also that the difference between the rates declined over the three years.

As predicted, those living in large cities, defined by a population of over 100,000, have lower recycling rates as shown in Table 13.[21] Furthermore, community size was statistically significant for both years in the cross tabulations.[22] A negative relationship between large cities and recycling is expected (H7), so by 1995 the gap between living in a small and large city became more statistically significant than it had been in 1992.

TABLE 13
Recycling Rates based on Community Size

	City less than 100K	City over 100K
1992	85%	80%
1995	92%	86%

TABLE 14
Cross Tabulation of Living in a Large City and Recycling

Year	Pearson Chi-Square	P-value	Lambda	Cramer's V
1992	7.664	.006	.000	.060
1995	15.613	.000	.000	.087

Gender also follows the trend that past research presents. Although there is very little variation between males and females, women tend to recycle more than men by about one percentage point. Furthermore, between 1992 and 1995, the recycling rates increase by about the same amount. This descriptive data seems to support both hypotheses, that this demographic variable does not greatly affect recycling behavior and that women are slightly more likely to recycle (H8a and H8b). As shown in Table 16 the cross tabulation for gender further substantiates the null hypothesis H8b that there is no significant relationship.

[21] The difference between living in a large city or not affects the recycling rate by five to six percentage points, a number that does not change drastically between the years. This supports the hypothesized negative relationship between large cities and recycling behavior (H7).
[22] Living in a large city adds more to the prediction in 1995 than in 1992.

TABLE 15
Recycling Rates by Gender

	Year	Percent that Recycles
Male	1992	83%
	1995	88%
Female	1992	84%
	1995	90%

TABLE 16
Cross Tabulation of Males and Recycling

Year	Pearson Chi-Square	P-value	Lambda	Cramer's V
1992	.347	.556	.000	.013
1995	1.630	.202	.000	.028

Income and recycling behavior have different relationships in the two years. In 1992, higher income groups have higher recycling rates. In 1995, however, the recycling rate only varies two percentage points among the income quartiles.[23] The cross tabulations substantiate the descriptive statistics. Income is only statistically significant in 1992, and those with higher incomes were more likely to recycle.

TABLE 17
Recycling Rates by Income Quartile

Income Quartile	1992	1995
Lowest	79%	89%
Next to Lowest	82%	88%
Next to Highest	86%	88%
Highest	86%	90%

TABLE 18
Cross Tabulation of (Higher) Income and Recycling

Year	Pearson Chi-Square	P-value	Somers'd
1992	19.183	.000	-.047
1995	.844	.839	.006

[23] The lowest income group in 1995 actually has a higher recycling average than the two middle quartiles.

Based on descriptive and cross tabulation statistics, education does not have a statistically significant effect on recycling behavior. The mean comparisons of recycling for the different levels of education do not show much variation. Furthermore, education is not statistically significant in the cross tabulations. These statistics support the null hypothesis about education (H10b), that a statistically significant relationship does not exist between education and recycling.

TABLE 19
Recycling Rates for Years of Education

Age at End of Formal Education	1992	1995
Up to 15 Years	85%	90%
15-19 Years	83%	88%
More than 20 Years	85%	88%

TABLE 20
Cross Tabulation of (More) Education and Recycling

Year	Pearson Chi-Square	P-value	Somers'd
1992	2.118	.347	-.004
1995	1.045	.593	-.009

The relationship between age and recycling behavior predicted in H11b, that older people are more likely to recycle, is in line with the descriptive statistics. As age increases, recycling behavior increases.[24] The recycling rates also vary with about the same number of percentage points for each year; so it does not appear that age is a better determinant in one year than another. Age is found to be statistically significant in the cross tabulations presented in Table 22.[25] These statistics support H11b, which argues that an older person is more likely to recycle.

TABLE 21
Recycling Rates for Age Groups

[24] In 1995, the 40-54 age group does not quite follow this trend.
[25] Age adds to the predictive quality of the model by 3.6% in 1992 and by 2.1% in 1995.

Age	1992	1995
15-24 Years	79%	84%
25-39 Years	82%	90%
40-54 Years	86%	88%
55+ Years	86%	90%

TABLE 22
Cross Tabulation of Age and Recycling

Year	Pearson Chi-Square	P-value	Somers'd
1992	10.216	.017	.036
1995	7.948	.047	.021

Logistic Regression

The last test that will be examined here is also the most important. Logistic regression is an analysis that is specifically designed for binary dependent variables. With logistic regression, all of the variables are entered into SPSS, and a large number of values are computed for each relationship. Multivariate regression greatly differs from the measures of bivariate association above because the values for each explanatory variable are given while the effects of all the other explanatory variables are controlled for.

Some of the values are given at the top of Tables 23 and 24 for both years. These numbers are relevant to the entire regression, not only to one variable. For example, the chi-square value in 1992, 119.731 is high, which is a good sign that the regression is statistically significant. The p-value is also most certainly below 5%. The next two values give an idea of an r-square, or the amount of variance that is explained by the combination of the inputted independent variables. Between 8.8 and 15.4 percent of the variation in recycling behavior was explained with the independent variables included in this study.

The most important numbers in the large table are the "P-value" and the "Exp(B)." The p-value works in the same way as p-values above and shows if the relationship can be explained by chance. If the p-value is lower than 5%, the relationship is deemed statistically significant.

The Exp(B) values are derived from the "B" value and are odds ratios, or they tell "how much the odds of the dependent variable change for each unit change in the independent variable." For this number to be more meaningful, 1 is subtracted from it to get "the percentage change in the odds for each unit change in the independent variable" (Pollock 2005: 202).

Based on the logistic regression results in Table 23 below, in 1992 only five of the variables listed were statistically significant in determining recycling behavior. Participating in a local clean-up initiative is one of the statistically significant variables, and based on the Exp(B) value, having participated increases the participant's odds of recycling by 306.9 percent. This finding is in line with the hypothesis that if a person participates in a local clean-up initiative, he or she has an increased chance of recycling (H3b). The belief that world governance is efficient at solving environmental problems is also statistically significant at determining recycling behavior, and it decreases the odds of recycling by 39.9. This finding supports the hypothesis that people who believe that the government is ineffective will be more likely to recycle (H5b). The regional divide of former East and West Germany is also statistically significant in 1992, and living in West Germany adds 172.6 percent to the odds of recycling. This finding supports the hypothesis that former West Germany will have a higher recycling rate than former East Germany in 1992 (H6a). Income is also statistically significant, and having a higher income increases the odds of recycling by 23.3 percent. This finding supports the hypothesis that a person with a higher income has an increased chance of recycling (H9a). Age is the last statistically significant variable, and being older by one year adds 2.1 percent to the odds of recycling. This finding back up the hypothesis that older people are more likely to recycle (H11b).

To reiterate, in 1992 the logistic regression shows that five variables are statistically significant: participating in a local clean-up initiative (positive impact on recycling), believing world governance is efficient at solving environmental problems (negative impact on recycling), living in West Germany (positive impact on recycling), having a higher income (positive impact on recycling), and being older (positive impact on recycling).

TABLE 23
Logistic Regression with all Variables- 1992

Chi-square	P-value	Cox & Snell R Square	Nagelkerke R Square
119.731	.000	.088	.154

	B	S.E.	Wald	P-value	Exp(B)
Pollution Concern	-.245	.142	2.981	.084	.783
Tropical Forest Concern	-.080	.193	.174	.676	.923
Ozone Layer Concern	-.112	.233	.230	.631	.894
Use Up Resources Concern	.020	.129	.023	.879	1.020
Global Warming Concern	.100	.208	.233	.629	1.105
Ideology	-.054	.046	1.368	.242	.948
Membership in Association	-.850	.433	3.847	.050	.427
Did Clean-up Initiative	1.403*	.347	16.391	.000	4.069
Demonstrated	.609	.427	2.028	.154	1.838
Economic Trade-Offs	.113	.181	.393	.531	1.120
World Gov't Effective	.336*	.146	5.295	.021	1.399
EC Effective	-.015	.174	.007	.931	.985
National Gov't Effective	-.131	.168	.610	.435	.877
Regional Gov't Effective	-.092	.178	.266	.606	.912
Local Gov't Effective	-.091	.156	.343	.558	.913
Live in former W. Germany	1.003*	.179	31.545	.000	2.726
Live in Large City	-.128	.180	.501	.479	.880
Male	-.223	.166	1.804	.179	.800
Income Quartiles	-.265*	.079	11.256	.001	.767
Education Level	.019	.126	.024	.877	1.020
Exact Age	.021*	.005	15.224	.000	1.021
Constant	1.420	.795	3.193	.074	4.137

* = $p<0.05$

The results for the logistic regression for the 1995 data can be read in the same way. The regression was still statistically significant in 1995; however, the chi-square value somewhat lower. The r-square measures show that somewhere between 10.5 and 22.1 percent of the variation in recycling behavior is explained with the included independent variables.

Once again only five of the tested variables are found to be statistically significant, but some of the statistically significant variables are not the same as in 1992. Interestingly, income and age are no longer statistically significant predictors of recycling behavior. For these and all other statistically insignificant variables, the null hypotheses are substantiated. Being concerned for the destruction of tropical forests was statistically significant and increases the odds of recycling by 52.1 percent. This finding supports the hypothesis that as environmental concern increases, so does recycling behavior (H1b). Participating in a local clean-up initiative is still statistically significant in 1995, and participation adds 394.4 percent to the odds of recycling. This is actually more of an addition to the recycling prediction than in 1992. This finding supports the hypothesis that if a person participates in a local clean-up initiative, he or she has an increased chance of recycling (H3b). Believing that the world governance is efficient at helping the environment is still statistically significant in 1995, and a person who believes this is 217.6 percent less likely to recycle. This finding shows a very impressive increase from the 1992 effect of belief in the efficiency of world governing bodies. This finding, as in 1992, supports the hypothesis that people who believe that the government is ineffective will be more likely to recycle (H5b). The regional division of former East and West Germany is still statistically significant in 1995, and it adds 74.4 percent to the odds of recycling. This shows a sharp decrease from its impact on recycling in 1992, another hint that the division was not as clear in 1995 as it had been in 1992. This finding supports both the hypothesis that former West

Germany will have a higher recycling rate than former East Germany in 1992 (H6a) and the hypothesis that the difference between the rates in the two regions will decline over the three years (H6b). Finally, living in a large city is a statistically significant determinant of recycling behavior in this regression. Living in a large city decreases the odds of recycling by 74.7 percent, which supports the negatively hypothesized relationship between large city dwellers and recycling behavior (H7).

To reiterate, in 1995 the logistic regression shows that five variables are statistically significant: concern for the destruction of tropical forests (positive impact on recycling), participating in a local clean-up initiative (positive impact on recycling), believing world governance is efficient at solving environmental problems (negative impact on recycling), living in West Germany (positive impact on recycling), having a higher income (positive impact on recycling), and living in a large city (negative impact on recycling).

TABLE 24
Logistic Regression with all Variables- 1995

Chi-square	P-value	Cox & Snell R Square	Nagelkerke R Square
90.610	.000	.105	.221

Variables	B	S.E.	Wald	P-value	Exp(B)
Pollution Concern	-.034	.190	.033	.856	.966
Tropical Forest Concern	-.736*	.238	9.536	.002	.479
Ozone Layer Concern	-.067	.277	.059	.809	.935
Use Up Resources Concern	.377	.209	3.262	.071	1.458
Global Warming Concern	-.319	.281	1.288	.256	.727
Extinct Species Concern	-.380	.245	2.405	.121	.684
Ideology	.058	.081	.519	.471	1.060
Membership in Association	-.274	.513	.284	.594	.761
Did Clean-up Initiative	1.598*	.573	7.774	.005	4.944
Demonstrated	-.059	.471	.016	.900	.942
Economic Trade-Offs	-.291	.192	2.309	.129	.747
World Gov't Effective	1.156*	.422	7.494	.006	3.176
EC Effective	.110	.517	.045	.832	1.116
National Gov't Effective	-.818	.464	3.101	.078	.441
Regional Gov't Effective	.370	.407	.828	.363	1.448
Local Gov't Effective	-.193	.356	.295	.587	.824
Live in former W. Germany	.556*	.267	4.331	.037	1.744
Live in Large City	-1.373*	.317	18.803	.000	.253
Male	-.029	.262	.012	.912	.971
Income Quartiles	.114	.117	.947	.330	1.121
Education Level	-.311	.200	2.410	.121	.733
Exact Age	.000	.008	.001	.973	1.000
Constant	4.069*	1.101	13.660	.000	58.483

* = $p<0.05$

Because logistic regression is capable of holding other variables constant while interpreting the effect on recycling behavior, it has the most power in deciding which variables are truly statistically significant. Even though only five variables were found to be important in determining recycling behavior for each year, this finding actually helps by showing that many variables do not have their often-presumed relationships with recycling. The following variables were not statistically significant in the logistic regressions of the data for 1992 or 1995: concern for environmental problems (except for the destruction of tropical forests), ideology, membership in an ecological organization, past demonstrating, perceptions of governments (except for at the world level), gender, and education.

Although many hypotheses were not upheld in this study, a number of important findings stand out.

The most interesting aspect of this research is the narrowing gap between former East and West Germany between 1992 and 1995. So soon after reunification, there is a substantial increase in recycling participation in the east. The fact that the east-west distinction was no longer as significant in 1995 as in 1992 points to the changes that occurred.

These findings led to the question of whether the variables that were statistically significant in 1992 and in 1995 in former East and West Germany were the same. In other words, were the factors of West German recycling the same as the factors for East German recycling? Logistic regressions were run on each of the regions separately to determine the variables that were statistically significant. Tables 27 with the data from the logistic regressions are in the appendix on pages 82-83. For easier comparison, the variables that were found to be statistically significant for each of the regressions are listed in Table 26 below. The change in the odds of recycling for each variable is also included. This percentage essentially means that if a person

falls into this category or has done this activity, this increase (or decrease in the case of a negative number) in the chances of that person recycling is predicted.

TABLE 26
Variables Statistically Significant in Logistic Regressions
and Each Variable's Change in the Odds of Recycling

	Germany		Former West Germany		Former East Germany	
1992	- Did Clean-up Initiative	306.9%	- Environment Priority over Economy	79.6%	- Did Clean-up Initiative	482.0%
	- World Gov't Not Efficient	39.9%	- Live in Large City	-45.4%	- Demonstrated	382.4%
	- Live in former W. Germany	172.6%	- Lower Income Quartile	-27.2%	- World Gov't Not Efficient	58.5%
	- Lower Income Quartile	-23.3%	- Higher Education Level	-36.2%	- Lower Income Quartile	-19.1%
	- Exact Age (Older)	2.1%			- Exact Age (Older)	2.8%
1995	- Tropical Forests- Not Concerned	-52.1%	- Tropical Forests- Not Concerned	-60.7%	- Did Clean-up Initiative	838.8%
	- Did Clean-up Initiative	394.4%	- Use Up Resources- Not Concerned	82.0%	- Live in Large City	-82.8%
	- World Gov't Not Efficient	217.6%	- Environment Priority over Economy	-47.9%	- Higher Income Quartile	56.8%
	- Live in former W. Germany	74.4%	- World Gov't Not Efficient	230.3%		
	-Live in Large City	-74.7%				

It is important to look at variables that show up on this table more than once and that show greatly varying or counterintuitive effects on the odds of recycling. Not being concerned for the destruction of tropical forests decreases the odds of recycling in former West Germany as in Germany as a whole in 1995. Strangely, not being concerned that resources are being used up

increases the odds of recycling in West Germany in 1995.[26] Having participated in a clean-up initiative greatly increased the odds of recycling for all 1992 regressions and increased the odds even more for former East Germans in 1995. The effects of this variable on the odds of recycling were the largest of any significant variables found; in East Germany in 1995 having done this helped with a clean-up initiative meant a person was more than 8 times as likely to recycle. Having demonstrated was only statistically significant for former East Germans in 1992 but had quite a significant effect on the odds of recycling (making someone almost 4 times as likely to recycle). Viewing the environment as a priority over economic priorities was only statistically significant for former West Germany but had drastically changing effects on the odds of recycling, shifting from a positive 80% in 1992 to a negative 48% in 1995.[27] The belief that the world government is not effective at helping the environment was the variable with the second largest impact on odds of recycling. Believing this about the world government made a person more than twice as likely to recycle in Germany and former West Germany in 1995. It is interesting to point out that the belief in the efficiency of all other levels of governments were not statistically significant in determining whether a person recycles in any of the regressions. Living in a large city was statistically significant on three different occasions and, as hypothesized, always had a negative effect on the odds of recycling. The income of a person was statistically significant more than hypothesized, but where significant the relationship held true that those with higher incomes had higher rates of recycling. Education was statistically significant for former West Germans only in 1992, and being more highly educated had a

[26] This variable is right under the bar for being statistically significant (sig.=.045). A mean comparison for West Germany in 1995 shows the recycling rates for those who answered about their concern for resources being used up: "very worried" 90%, "somewhat worried" 91%, "not very worried" 84% and "not at all worried" 91%.

[27] Whereas the mean comparison for West Germany in 1992 looks as one might expect, with varying rates based on the answer to this question (even though very few answer that the economy is a priority over the environment), the mean comparison in 1995 only has recycling rates that vary by 2 percent.

surprising negative impact on the odds of recycling.[28] Age was the last variable that was statistically significant in any of the regressions. Being older had a very minor, but positive, effect on the odds of recycling.

These additional logistic regressions do not clearly point to any statistically significant variables that seem to cause the variation in recycling rates between former East and West Germany in 1992. They also do not help explain the fact that only three years later there was less of a distinction in recycling rates. It is very important to keep in mind that the logistic regressions are only able to explain between 9 and 22 percent of the variation in recycling rates for the two logistic regressions for all of Germany. Although some of these variables have rather significant impacts on the odds of recycling, there are clearly other factors at work. Contextual factors are among those that must be kept in mind.

The different recycling systems that were in place in 1992 and the introduction of the Duales System Deutschland that had taken full effect by 1995 is one very plausible explanation. In 1992 there were also likely problems in transitioning between the collapse of *Sero* and the introduction of the DSD. Furthermore, the quick decline in the distinction between former East and West Germany in recycling stands in sharp contrast to many other aspects of society that remained distinct for decades.

This statistical analysis has brought forth a number of conclusions. Only a few variables were found to be statistically significant in deciding whether or not a person recycled. In 1992 these variables were participating in a clean-up initiative, believing in the efficiency of the world government, living in former West Germany, income and age. In 1995 statistically significant variables were concern for tropical forests, participating in a clean-up initiative, believing in the

[28] Even after examining the significance and mean comparisons for this variable, I do not believe the data is misleading. Another variable that could correlate to education level, such as living in an apartment vs. a home, might be interfering.

efficiency of the world government, living in former West Germany and living in a large city. Despite the impact of participating in a clean-up initiative, neither being a member in an environmental organization nor participating in a demonstration for an environmental cause was statistically significant. It is also interesting that the only level of government that was statistically significant was the world level. Furthermore, even though the impact of living in East or West Germany decreased, the distinction did still exist in 1995. The goals of this statistical analysis were accomplished: the determinants of recycling behavior in the case of Germany in the early 1990s were ascertained and the distinction between former East and West Germany was examined.

CHAPTER 4: Interviews

While studying abroad I was able to conduct interviews regarding attitudes toward the environment and recycling in the 1990s. Due to time and logistical restrains, I only conducted ten interviews. The purpose of the interviews was to provide stories and conceivable reasoning for explaining the empirical data and analysis discussed above.

I called the interview participants on the phone, and the interviews lasted anywhere from 6 to 25 minutes. The average duration of the interviews was 14 minutes. The 6-minute interview was not complete, as the woman was also the oldest of the interviewees, at 87 years. The shortest complete interview was 8 minutes long. Age did not always correspond with the interview length, as one of the two 25-minute interviews was conducted with the second oldest interviewee, at 81 years of age. The interview length often depended on how well I knew the contacts; those who I did not personally know, whose numbers I had received to contact, were often much more likely to answer the questions in a much shorter fashion. Unfortunately the contacts from former West Germany were much more personal contacts. The average length of interviews with former West Germans was 17 minutes, whereas the average with former East Germans was 11 minutes. The average age of those being interviewed was 63. The youngest person interviewed was 36 years old.

The respondents also lived in various states (*Bundesländer*) in the early 1990s. Half of the respondents lived in former East German states, and the other half lived in former West German states. Seven states (*Bundesländer*) were represented, three in former West Germany and four in former East Germany. Three of the respondents lived in a house in the early 1990s, whereas seven lived in an apartment.

It is important to keep in mind that the interviews were all conducted on the basis of knowing contacts. The questions were not the type that would put a person's character in question; however, the interviewer/interviewee relationship was certainly not as impersonal as one would be for the Eurobarometer. Sometimes during the interviews the respondents could not remember details or pinpoint time periods. This element is completely understandable but also a point that I have on occasion accounted for in the summarization of the information. The interviews can certainly serve to help explain some of the data discovered above; however, the interviews are more a source of contextual information than something to be accepted as hard fact.

When asked if the respondents currently sort their trash to be recycled, all acknowledged that they do. All interviewees also said that everyone in the household takes part in sorting the trash. The only changes in time for this were that children were old enough at different time points to help out or that children have since moved out of the house.

Answers to a few questions were key in understanding exactly how sorting trash was practiced in the early 1990s. The information gained from the respondents will give a general picture of recycling in former West and former East Germany.

Former West Germany

The respondents who lived from former West Germany all said that they sorted their trash in the early 1990s. A woman who lived in an apartment mentioned that she initially collected recyclables and trash with her own containers inside the apartment, the contents of which were then brought to the larger separated recycling and trash containers in the basement.

The landlord provided the recycling bins and trash cans for the apartments and made sure that they were set out on the necessary days.

Trash and recycling were picked up curbside. Two people mentioned a calendar that was given out each year (and still is given out) that included "everything you need to know," particularly the days to set out which containers. Two respondents with homes mentioned that the recycling and trash bins were located outside. A woman who originally came from a more rural, agricultural area mentioned that her parents' recycling is still picked up by the volunteer fire department, as it was when she was growing up. She mentioned that the fire department truck would drive around and pick up paper and metal to recycle. Someone mentioned that the trash cans were "given out" and another that they were "provided by the community." One person mentioned that the trash service was paid for, but that recycling, namely the "*Gelbe Sack*," did not cost to be picked up. One person said that a certain number of trash bags were given out, but they had to be purchased if they were not sufficient. As to references about who was in charge of the trash and recycling disposal, passive voice was often used to avoid such a reference, but groups such as the community or government (*Staat*) and the trash service were sometimes mentioned.

As far as which materials could be recycled in former West Germany, the answers varied to some degree. Everyone mentioned that *Restmüll*, or any trash leftover that cannot be recycled, was picked up. All mentioned that paper could be recycled. Also there was agreement that glass was "like it is today," meaning that glass was at first collected at home then brought to a public collection location, usually a large metal bin. Three people mentioned that the "*Gelbe Sack*" was in use at the time, which would have included all plastics and metal (e.g. aluminum foil). One person mentioned plastic and aluminum foil but did not mention the "*Gelbe Sack*." One person

was not sure if it was possible to recycle plastic at that time. One person mentioned that batteries could be brought to a collection location instead of throwing them in with the leftover trash. Someone else mentioned that special waste (*Sondermüll*) such as paint and varnishes, large trash (*Sperrmüll*) such as a washing machine, and electronic scrap could also be picked up but only a few times a year. Two people mentioned that compost was picked up, and one person, who lived in a home, mentioned that the family composted in the yard.

Former East Germany

In former East Germany, answers about the sorting of trash were similar in ways and different in others. One person said that there was only one trash can, and everything went in it except for plastic, which was taken "far away," and scrap metal, which was collected separately. Another person mentioned that at some point shortly after the fall of the Berlin Wall, the East German recycling company, *Sero*, "disappeared," and for a while glass was thrown in with the regular trash (*Restmüll*) because there was nowhere to take it. He said that in the early 1990s recycling was available for *Grüne Punkt* items (items that go in the *Gelbe Sack*), for paper, for glass, and for compost. One person said that the trash was sorted into bins for glass bottles, paper, and regular trash (*Restmüll*). Another person mentioned the option to recycle paper, glass bottles, and plastic. A couple of people said that the trash and recycling bins were provided.

Two respondents explained the recycling system of East Germany before reunification. In the GDR there was no charge for trash to be picked up, but households, particularly children who were entrusted with the task, received money for individual items brought to be recycled. A couple of respondents mentioned that a certain amount of money was offered for each glass bottle. Interviewees mentioned that *Sero* accepted paper and glass. They also mentioned that

plastic was hardly ever used as packaging. Both respondents who discussed *Sero* also said that there was only one trash can for all items that could not be recycled. In other words, recycling in the GDR was not curbside; money was only received for items that were taken to a recycling collection center.

Learning and Starting to Sort Trash

When asked how the respondent learned to sort trash to recycle, answers varied quite a bit. Four people responded in some way that they learned it at a young age: either through parents, in kindergarten, or "right from the cradle" ("*von Kindesbeinen an*"). A few people mentioned that the media, newspapers and flyers instructed people on how to recycle. One person mentioned the calendar that was given out which instructed the citizens on both how and when to set out the sorted trash. One person from former East Germany mentioned that recycling was first introduced in the 1990s in the unified FRG. A respondent from former West Germany mentioned that people learned to recycle in the 1970s when people became very environmentally aware.

When asked why people began to sort their trash, a few commonsense answers were prevalent. Some said that it was normal to do so, or that they had always sorted their trash. Others agreed with it particularly because it seemed good for the environment. One person started recycling because it saves money, largely because "the *Restmüll* is always the most expensive." Another person mentioned the desire to produce less *Restmüll*, probably also for financial reasons.

Is Sorting Trash Influential?

Another question asked participants if they felt that sorting waste influenced their lives. The answers can be categorized rather clearly along the former east-west division. The participants from former West Germany all said that it has influenced their lives in some way. Even if in passing, one person claimed that it sharpens environmental awareness and makes you pay attention to what you throw away. Another person said it takes effort but you have the feeling of doing something good. One person thought that it is better for public health. Another person agreed that it impacted her life; however, she disagreed with the current policy, believing that machines can sort waste more effectively, which could save the water and energy that Germans spend to clean their trash in order to store it. The last of the respondents from former West Germany said it makes you pay attention to what is being done with the garbage and try to avoid packaging waste. This person also believed that sorting waste increased environmental awareness.

The interviewees from former East Germany had rather drastically different responses. It is important to keep in mind that I did not personally know any of the interviewees from this group. Of the four who answered this question, three said it did not influence their lives. One person said it was hardly influential. Since the number of interviews was not statistically significant, it is difficult to determine much from the results of a question like this. Nonetheless, the correlation is interesting and could suggest that the reason for recycling in former East Germany is different than in western Germany.

Feeling of Efficacy

Also interesting are the answers to the question of whether or not the person's effort in separating trash helps the environment. Three of the interviewees from former West Germany said that it is helpful. Two added the idea that even if it is a small bit, it adds up in the end if everyone sorts their trash. One person was not certain anymore that it is helpful, because she believes that there are better ways to sort the trash, but added that it is important to avoid trash. Another person from former West Germany said that sorting trash is like drops on a hot stone. The respondents from former East Germany also had varied responses. One person said that you have to start small. Another said that it helps only a tiny bit, because it often ends up in one landfill anyway. One interviewee was rather doubtful saying, "possibly, I guess." Another person said, "yes, of course, even if a small bit." The idea that recycling ends up in a landfill or doubt about how helpful recycling is to the environment, particularly in East Germany, further points to a residual distinction in the mentality of eastern and western Germans with regard to recycling.

How Children Learn Today

Answers to the question of where and how children today learn to sort trash were rather similar across the board. Most people mentioned they learned it at home from parents or at kindergarten and in elementary school. Two people mentioned that children see the trash containers for separated waste at public places such as train stations and ask parents about the reasoning. Others said that recycling is a very public topic and that children also learn about sorting trash through the media. As one person put it, children grow into it.

Changes in Attitude towards the Environment

Another question asked if the current German attitude towards the environment is different than it was in the early 1990s. Everyone agreed that some change has occurred. Many people elaborated on the positive aspects of this change: there is an accepted understanding of the necessity to take care of the environment; people are mindful, more environmentally conscious and responsible; the topic is discussed more now; the Green party is more popular; or recycling has gotten easier with the *Gelbe Sack*. On the other hand, only two people simply said yes. Of the seven who had comments about how there has been a positive change in attitude towards the environment, five also mentioned in some way or another that the public is less interested, even indifferent, and finds it less important, or that the media discusses environmental issues less.

The next question asked how the respondent's personal attitude towards the environment has changed since the early 1990s. Most people replied that his or her attitude has not changed at all or not much, sometimes saying that by the early 1990s his or her mind was already made up. One person responded that avoiding trash is always becoming more important. The fact that interviewees were somewhat older (the average age was 63) likely led to the lack of change. It is understandable that by the time people reach their late 20s, most people have made up their minds on key issues.

Government's Impact

When asked if the German government and governments in general do enough to protect the environment, rather varied answers were given. One person referred to southern Europe and Greece as governments that do not do their share in protecting the environment. Perhaps my

introduction as an American led respondents to disregard the elephant in the room. Other than this one comment, however, everyone else referred to "government" in general, or the German government and did not make a distinction between certain governments that do a better or worse job at protecting the environment. Two people said that the governments try or maybe do enough; still, no one outright said that the government does enough. Six people said that the government does not do enough or can never do enough for the environment. Three people added that the government only does what industry says and that trash services are companies primarily worried about making a profit.

Voting and Party's Attitude

When asked whether a party's stance on the environment has an impact on the respondent's voting in regional and federal elections, the responses were assorted, but most mentioned the party's attitude has some impact. Three people said that it certainly has an impact. One person who said this also mentioned that environmental protection is becoming increasingly expensive. Five people said that the party's attitude towards the environment is a factor, but not the determining factor, also commenting that the attitude should match up with the general voting tendency or that all parties are environmentally concerned to some extent. Only one person said that the party's attitude towards the environment was not important in deciding his vote.

The information gained from the interviews was by no means meant to be statistical because of the small number of interviews. On that account, the interviews give a plethora of anecdotal material that helps paint a picture of recycling in Germany in the early 1990s. The

most relevant aspect of these interviews is that they show the culture of recycling that existed in Germany at that time. The lengthy and detailed descriptions of how to recycle show how ubiquitous recycling was (and is) in Germany. Not only were an astonishing number of types of materials recyclable, but calendars were also given out to make citizens aware of when and how such items should be recycled.

One of the most insightful moments of the interviews for me was a younger man's description of the "disappearance" of *Sero* and the subsequent practice of throwing away materials that had previously been recycled. Unfortunately it would be extremely difficult to find out exactly when DSD was fully active in East Germany. Understandably, it would have taken time for DSD to make arrangements in the newly added *Bundesländer,* especially with the multitude of transitions the former country was making at the same time. Although it would be impossible to know if the lack of recycling services is the reason for the lower recycling rate in former East Germany in 1992, it is a sound theory with some evidence.

CONCLUSION

This thesis addressed two main questions, and I will now examine the progress in answering them. First of all, I investigated the determinants of recycling behavior, particularly theories about pro-environmental and recycling behavior, which predicted the variables that would be important, and I tested these theories on the case of Germany in the early 1990s. A very small number of the variables that were examined were statistically significant. Furthermore variables that were statistically significant did not fall into categories or help explain the high rates of recycling. For example, instead of forms of activism being important, only one, participation in a clean-up initiative, was significant, or only the perceived effectiveness of one level of government, the world government, mattered in determining recycling behavior. These few significant variables stand in contrast to the models on which I based my hypotheses; in these models many variables were statistically significant and formed a basic understanding of what brought people to recycle. In one way it might appear helpful that so few factors were statistically significant because it would only take a few changes in order to increase the chances that a person will recycle. However, because of the fact that so many other authors who study the activation of the behavior are in agreement that a broad range of variables is important in causing a person to recycle, this is not likely the case.

Because of these results, I am led to conclude that another factor, even an obvious but overlooked one, is at "fault" for these findings. The high rates of recycling in Germany may indeed be causing the problem of finding out what leads people to recycle. Indeed, if there is such a small subset of people that were not recycling in Germany at that time, around ten percent of the population, the theories that others have used to explain recycling may not apply to the

case of Germany. Furthermore, even though recycling may have started out as an "environmental" action, because recycling became universal, even a cultural norm, in Germany, recycling may have lost the connection to environmentalism and become a routine activity of daily life. If recycling was no longer caused by environmentalism, the variables used here to explain recycling behavior were perhaps no longer as applicable in discovering what determined recycling behavior.

This thesis also addressed the theory of the *Mauer im Kopf* in relation to recycling. Quite in contrast to this theory, recycling rates were not very low in East Germany in 1992 and had almost completely caught up to West German rates by 1995. At first, I had falsely assumed that recycling did not exist in East Germany because like other countries under the influence of the Soviet Union, the environment was not a top concern. However, East Germany's need for resources led to a surprisingly effective system of recycling. Instead of the process of West Germany graciously introducing the practice of recycling to East Germany, a very different task was being undertaken in the early 1990s. The introduction of the DSD was not immediate but took time. Not only was East Germany in the midst of beginning a long and extensive process of accepting West German institutions, but the East German recycling organization, *Sero*, had for some time no longer been functioning. Despite the rocky road in transitioning to the DSD, East Germany had rather similar rates of recycling compared to West Germany by 1995. Indeed, recycling defied the *Mauer im Kopf*. East Germans were not a people who had never recycled before. They had plenty of practice in incorporating recycling into their daily lives, and once the recycling systems were reinstated, former East Germans continued recycling.

Some questions still remain to be answered and could be further researched. It is still not understood why Germany as a country has such high levels of recycling in the first place.

Furthermore, although different recycling systems were explored in this thesis, their statistical significance was not measured. Examining other European recycling systems might shed light on country-level factors that determine a country's recycling rate. Additionally, because of Germany's high success in achieving recycling rates, the specific measures that would increase recycling rates in other countries could be discovered. Due to the lack of similar questions on further Eurobarometer datasets, the statistical analysis could not be continued for further years while still using the hypotheses proposed. While this study is helpful at explaining recyching behavior right after reunification, further research could look at the impact of similar questions, as well as a number of contextual variables, on recycling behavior over a larger time span. Explaining Germany's recycling rates up to the present-day would help fill in gaps in research. It is also worrisome that neither of the logistic regressions for 1992 and 1995 explained more than a quarter of the variation in German recycling behavior. This study focuses on one contextual factor, the recycling systems in place before and after reunification, but perhaps there are other contextual factors that are larger determinants of recycling behavior. Although this thesis adds to the understanding of recycling behavior and recycling systems in place in the early 1990s, there is still much research that can be done.

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APPENDIX

List of Hypotheses

H1a: There is no significant relationship between recycling behavior and environmental concern.
H1b: As environmental concern increases, so does recycling behavior.
H2a: There is no significant relationship between recycling behavior and ideology.
H2b: The more ideologically left-leaning a person is, the more likely he or she is to recycle.
H3a: If a person is a member of an ecological organization, he or she is more likely to recycle.
H3b: If a person participates in a local clean-up initiative, he or she has an increased chance of recycling.
H3c: If a person has participated in a demonstration against a project that could harm the environment, he or she is more likely to recycle.
H4a: There is no significant relationship between recycling behavior and environmental-trade offs.
H4b: If a person believes that the environment should be protected as much as the economy or even over the economy, he or she will be more likely to recycle.
H5a: People who believe that the government is effective with respect to environmentalism will be more likely to recycle because they feel that their efforts will make a difference with the support of the state.
H5b: People who believe that the government is ineffective will be more likely to recycle because they feel that they need to make up for the government's lack of responsibility in their own actions to help the environment.
H6a: Former West Germany will have a higher recycling rate than former East Germany in 1992.
H6b: The difference between the rates in the two regions will decline over the three years.
H6c: Former West Germany will have a higher recycling rate than former East Germany in 1995.
H7: People living in large cities will be less likely to recycle than those living in medium- and small- sized communities.
H8a: Women are more likely to recycle than men.
H8b: There is no significant relationship between recycling behavior and gender.
H9a: A person with a higher income has an increased chance of recycling.
H9b: A person with a lower income has an increased chance of recycling.
H10a: If a person is more highly educated, he or she has an increased chance of recycling.
H10b: Education does not have a significant relationship with recycling behavior.
H11a: A younger person is more likely to recycle.
H11b: Assuming that older people are more likely to own homes, older people are more likely to recycle.

Wording of Questions Used from Eurobarometers 37.0 (1992) and 43.1bis (1995)
(unless otherwise stated, the questions were the same for 1992 and 1995 and for former East and West German)

Recycling Behavior

"Welche der Dinge auf dieser Liste, falls überhaupt, haben Sie selbst schon einmal getan?"
Option 7 on the list was "Bestimmten Hausmüll getrennt sammeln (Glas, Papier, Altöl, Batterien. ...) um Recycling Möglichkeiten zu nutzen."

Environmental Concern

"Wie besorgt sind Sie über die folgende Probleme? Sind Sie sehr besorgt, ziemlich besorgt, nicht sehr besorgt oder überhaupt nicht besorgt?"
The problems on the list were: "Das Aussterben von bestimmten Pflanzen- und Tierarten und der Wegfall von Lebensräumen in der Welt; Die Erschöpfung der natülichen Vorkommen/Bodenschätze auf der Erde; Das Abholzen tropischer Regenwälder; Globale Erwärmung (Der Treibhauseffekt); Die Zerstörung der Ozonschicht; Die Gefahr, daß die Umweltverschmutzung aus Industrieländern auf weniger industrialisierte Länder übergreift."

Ideology

"In der Politik spricht man von 'links' und 'rechts'. Wie würden Sie persönlich Ihren politischen Standpunkt auf dieser Liste einordnen?"
1- "links", 10- "rechts"

Membership in an Ecological Organization

"Welche der Dinge auf dieser Liste, falls überhaupt, haben Sie selbst schon einmal getan?"
Option 5 on the list was "Mitglied in einer Umweltschutzorganisation werden."

Participation in a Local Clean-up Initiative
"Welche der Dinge auf dieser Liste, falls überhaupt, haben Sie selbst schon einmal getan?"
Option 8 on the list was "Beteiligung an einer örtlichen Aktion zum Umweltschutz, z.B. an einer Strand- oder Parksäuberung"

Demonstrated

"Welche der Dinge auf dieser Liste, falls überhaupt, haben Sie selbst schon einmal getan?"
Option 9 on the list was "gegen ein Projekt demonstrieren, das die Umwelt schädigen könnte"

Economic and Environmental Priorities

"Hier sind drei Meinungen, die man manchmal zu Umweltproblemen hört. Welche kommt Ihrer persönlichen Meinung am nächsten?"
The options were "Die wirtschaftliche Entwicklung sollte Vorrang vor den Belangen der Umwelt haben; Die wirtschaftliche Entwicklung muß sichergestellt sein, aber gleichzeitig muß die Umwelt geschützt werden; Belange der Umwelt sollten Vorrang vor wirtschaftlicher Entwicklung haben; Weiß nicht"

Efficiency of Government Levels

1992:"Öffentliche Stellen auf verschiedenen Ebenen können etwas unternehmen, um die Umwelt zu schützen. Tun öffentliche Stellen dies Ihrer Meinung nach sehr wirkungsvoll, ziemlichwirkungsvoll, nicht sehr wirkungsvoll oder überhaupt nicht wirkungsvoll?"
The levels mentioned were: "auf lokaler Ebene, auf regionaler Ebene, auf nationaler Ebene, auf der Ebene der Europäischen Gemeinschaft, auf weltweiter Ebene.
1995:"Öffentliche Stellen auf verschiedenen Ebenen können etwas unternehmen, um die Umwelt zu schützen. Tun öffentliche Stellen dies Ihrer Meinung nach wirkungsvoll oder nicht wirkungsvoll?"
The levels mentioned were: "auf lokaler Ebene, auf regionaler Ebene, auf nationaler Ebene, auf der Ebene der Europäischen Union, auf weltweiter Ebene.

Large City

Living in a large city was defined as living in a city with a population over 100,000.

Education Level

1992: "Wie alt waren Sie, als Sie Ihre Schul- bzw. Universitätsausbildung beendeten?"
1995: "Wie alt waren Sie, als Sie mit Ihrer Schul- bzw. Universitätsausbildung aufgehört haben?"
Education was recoded so that those still studying were listed as having the number of years of education based on their age. The recoded groups for education were: up to 15 years; 16-19 years; 20 years and older.

TABLE 27
Logistic Regressions of Eastern and Western Germany with all Variables – 1992 and 1995

	Chi-square	P-value	Cox & Snell R Square	Nagelkerke R Square
1992- W. Germany	45.553	.001	.064	.137
1992- E. Germany	70.771	.000	.109	.169
1995- W. Germany	64.375	.000	.132	.284
1995- E. Germany	48.058	.001	.125	.254

Variables	1992 West Germany	1992 East Germany	1995 West Germany	1995 East Germany
	B (S.E.)	B (S.E.)	B (S.E.)	B (S.E.)
Pollution Concern	-.164	-.308	.006	.105
	(.224)	(.193)	(.280)	(.280)
Tropical Forest Concern	-.287	.061	-.934*	-.460
	(.331)	(.252)	(.319)	(414)
Ozone Layer Concern	-.179	-.047	.050	.114
	(.422)	(.295)	(.377)	(.486)
Use Up Resources	.062	-.069	.599*	.130
Concern	(.219)	(.167)	(.299)	(.325)
Global Warming Concern	.251	-.033	-.696	-.340
	(.375)	(.263)	(.416)	(.434)
Extinct Species Concern	--	--	-.475	-.182
			(.360)	(.371)
Ideology	-.057	-.045	.126	-.024
	(.075)	(.062)	(.112)	(.127)
Membership in	-.600	-1.326	.576	-1.354
Association	(.550)	(.828)	(.728)	(.933)
Did Clean-up Initiative	.978	1.1761*	1.284	2.239*
	(.546)	(.490)	(.728)	(1.079)
Demonstrated	-.019	1.574*	-.356	.872
	(.564)	(.792)	(.601)	(1.014)
Economic Trade-Offs	.586*	-.155	-.652*	-.141
	(.296)	(.239)	(.310)	(.280)
World Gov't Effective	.227	.461*	1.195*	.946
	(.232)	(.198)	(.589)	(.692)
EC Effective	.385	-.346	.317	-.184
	(.271)	(.241)	(.706)	(.804)
National Gov't Effective	-.280	-.055	-.841	-.455
	(.288)	(.214)	(.640)	(.697)
Regional Gov't	-.353	.107	-.001	.944
Effective	(.288)	(.240)	(.561)	(.667)
Local Gov't Effective	-.025	-.182	.101	-.678
	(.250)	(.210)	(.506)	(.569)
Live in Large City	-.606*	.216	-1.161	-1.763*
	(.289)	(.242)	(.464)	(.466)
Male	-.029	-.247	.404	-.465
	(.277)	(.216)	(.380)	(.406)
Income Quartiles	-.317*	-.212*	-.051	.450*
	(.136)	(.102)	(.165)	(.183)
Education Level	-.449*	.325	-.094	-.608
	(.204)	(.168)	(.285)	(.323)
Exact Age	.009	.027*	-.012	.011
	(.008)	(.007)	(.012)	(.012)
Constant	3.141*	1.054	5.363*	3.329
	(1.254)	(1.069)	(1.582)	(1.711)

* = $p<0.05$